



HISTOLOGY

SLIDES

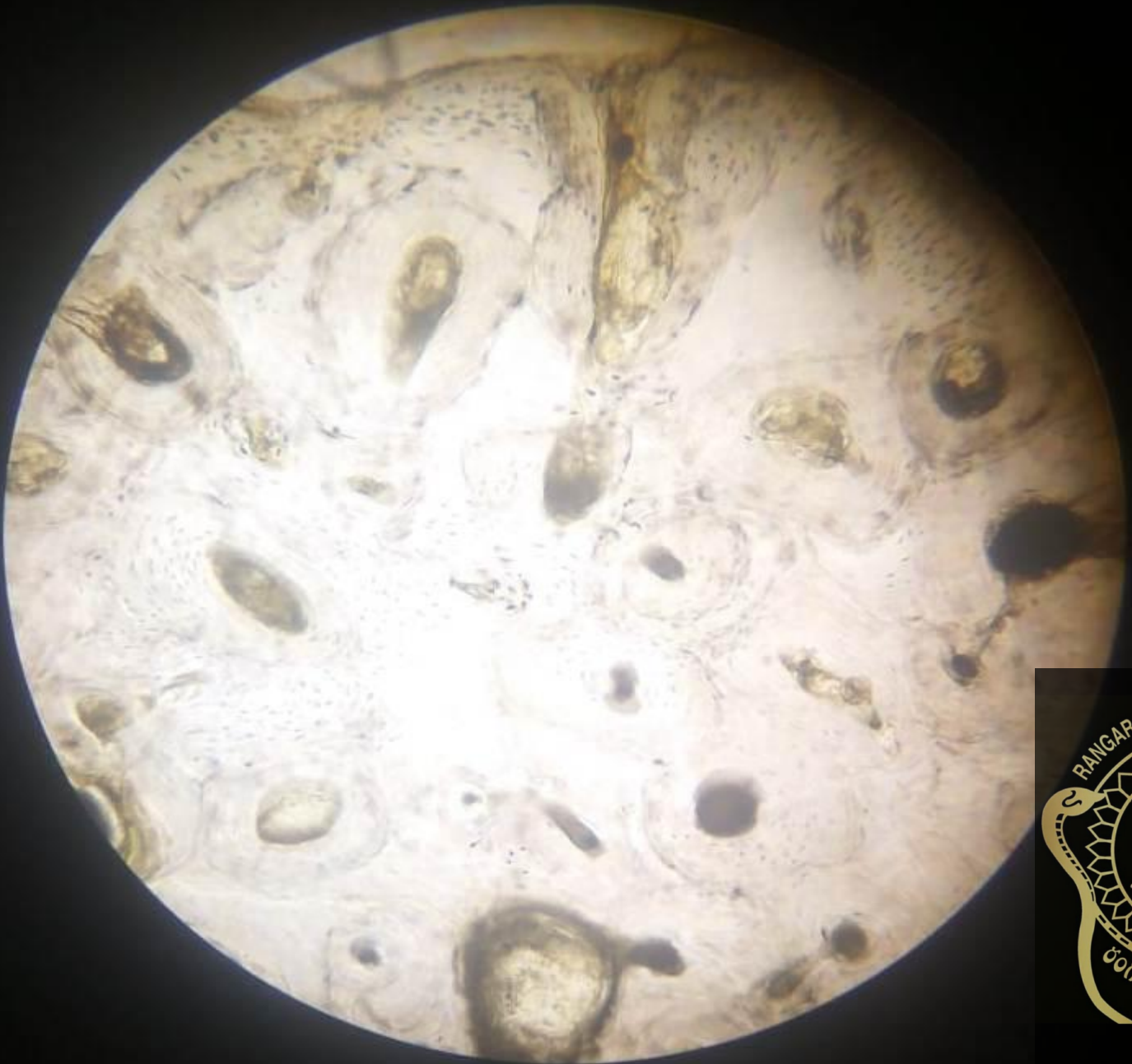
RANGARAYA MEDICAL COLLEGE
KAKINADA

STALWARTS 2K19

GENERAL HISTOLOGY



TS of Bone

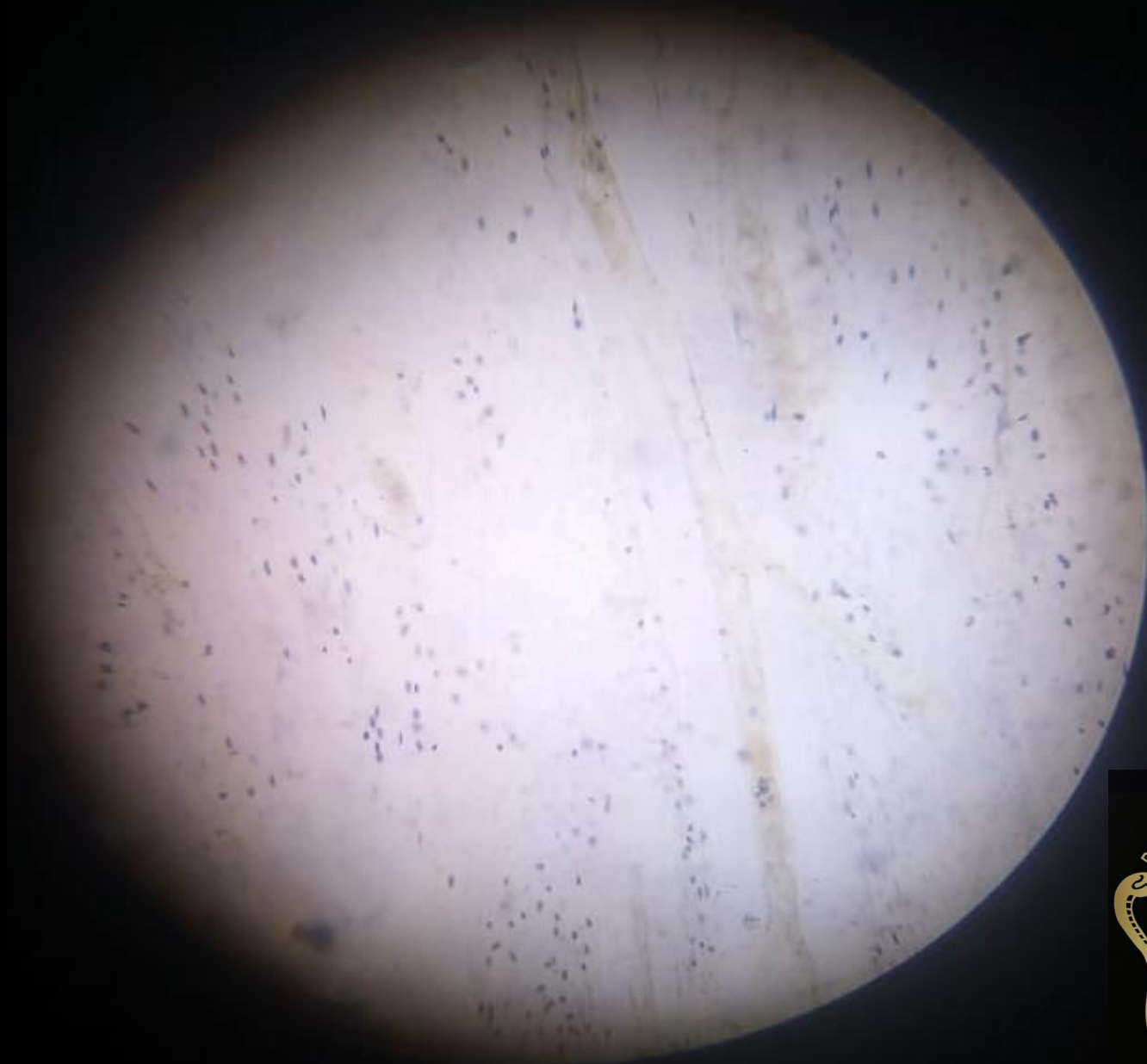


T.S BONE

- 1.TS section of haversian system with concentric lamellae around haversian canal is seen.
- 2.Lacunae containing osteocytes present.
- 3.Circumferential lamellae and interstitial lamellae seen.
- 4.Periosteum present



LS of Bone

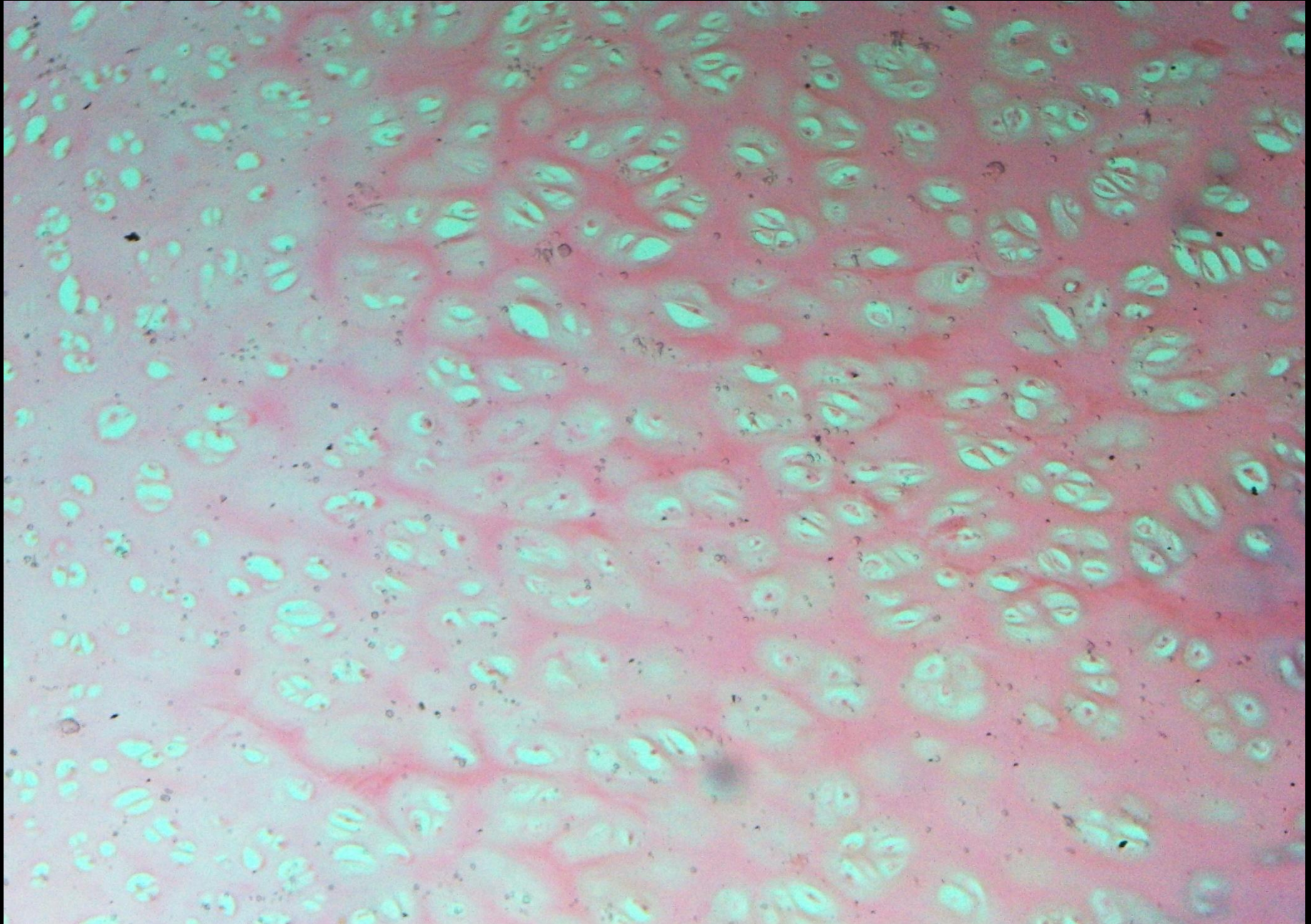


L.S OF BONE

- 1.L.S of haversian system with central haversian canals.
- 2.Volkmanns canal - interconnecting haversian canals seen.
- 3.Lacunae containing osteocytes seen.



Hyaline Cartilage



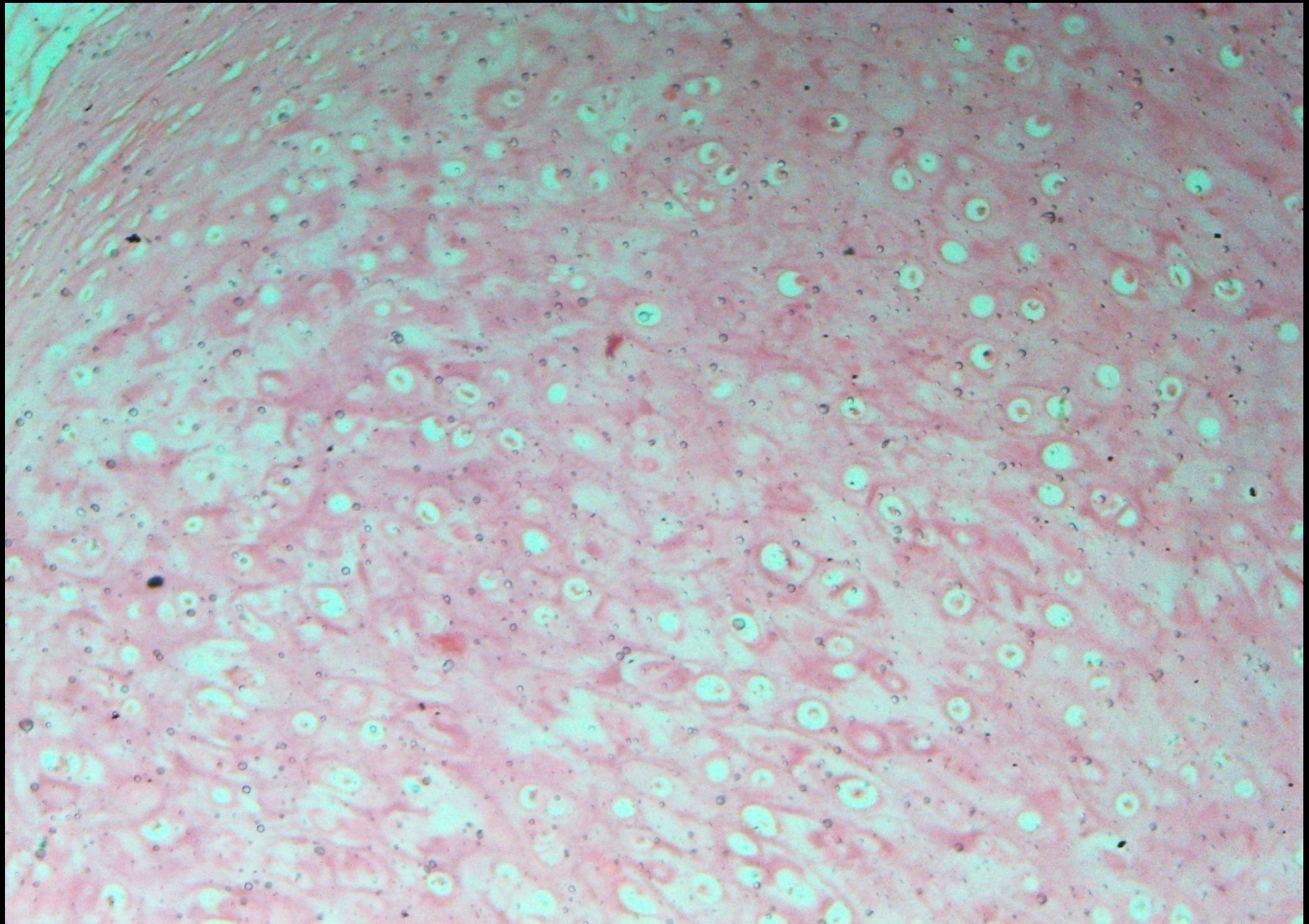
HYALINE CARTILAGE

Identification Points:

- Dense Irregular CT (perichondrium)
- Chondrocytes within lacunae
- Chondrocytes in the form of isogenous groups
- Naked eye examination: Bluish white translucent appearance



Elastic Cartilage



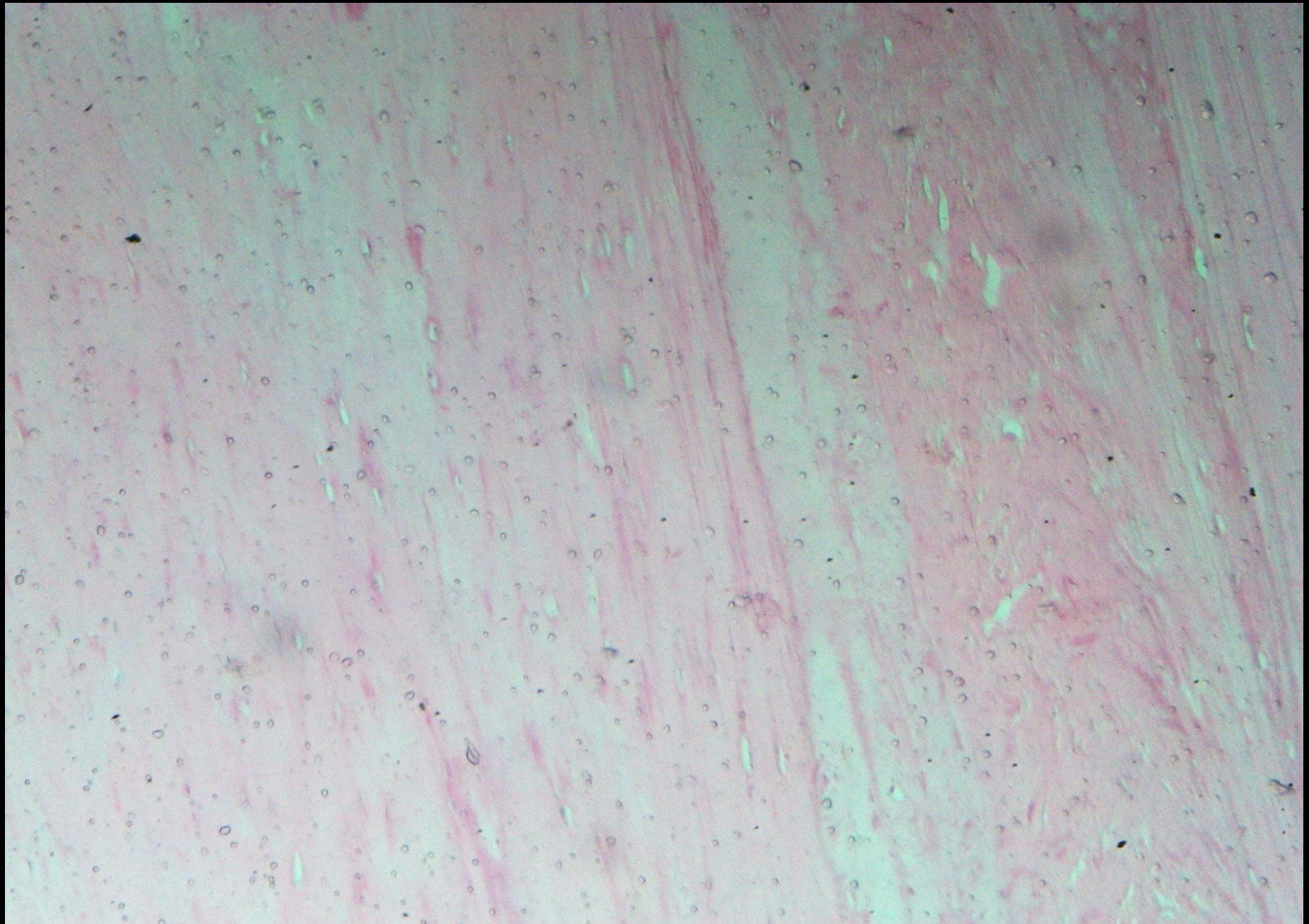
ELASTIC CARTILAGE

Identification Points:

- Perichondrium is present
- Elastic fibres in matrix
- Basophilic ground substance around lacunae
- Chondrocytes in lacunae in the form of isogenous groups



Fibrous Cartilage



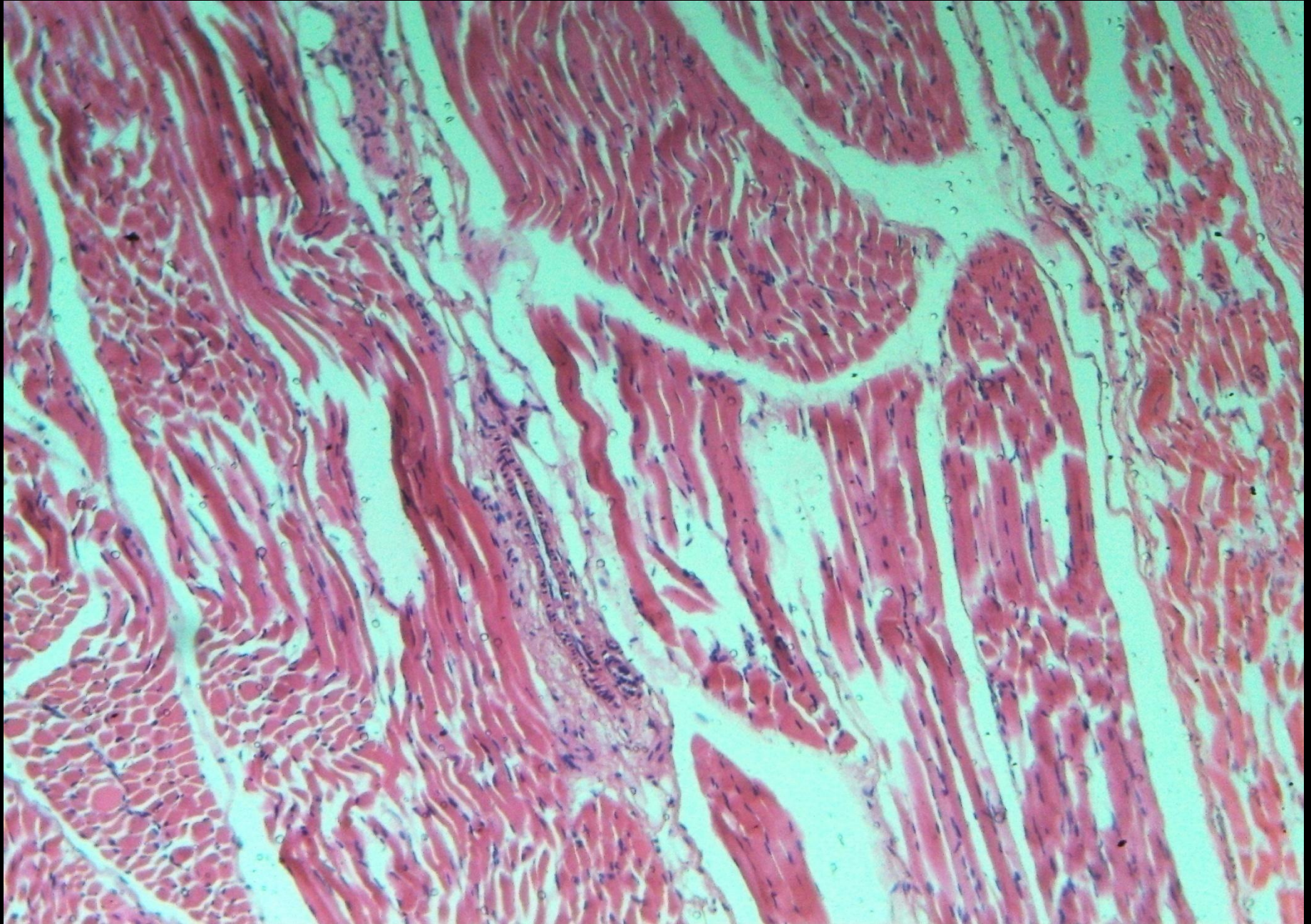
FIBRO CARTILAGE

Identification Points:

- No perichondrium
- Chondrocytes within lacunae, arranged in rows
- Collagen fibres arranged parallel



Skeletal Muscle



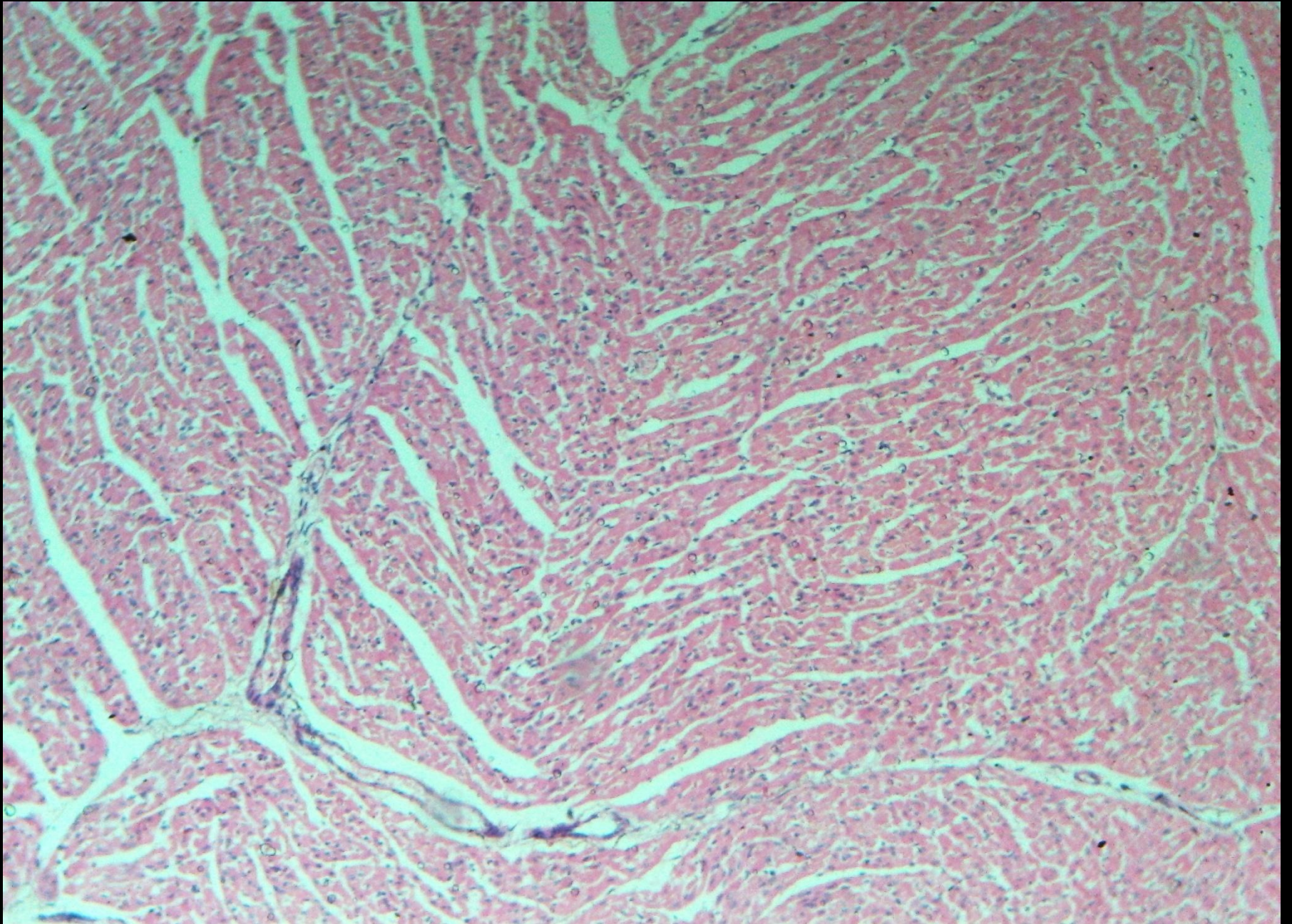
SKELETAL MUSCLES

Identification Points:

- Characteristic striated appearance
- Peripheral nuclei
- Nucleus ovoid in shape



Cardiac Muscle



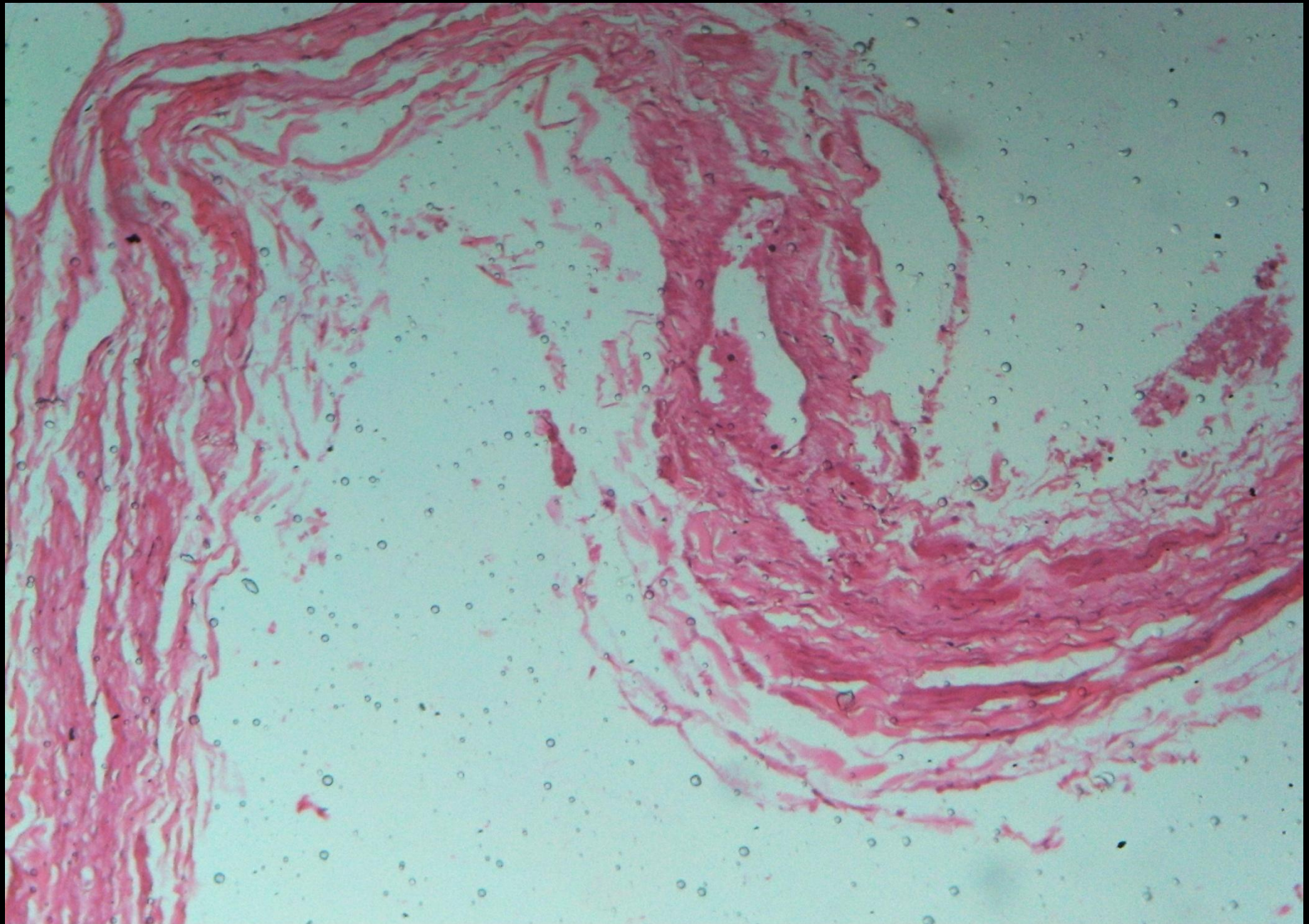
CARDIAC MUSCLE

Identification Points:

- Branched
- Striated
- Intercalated discs



Large Vein



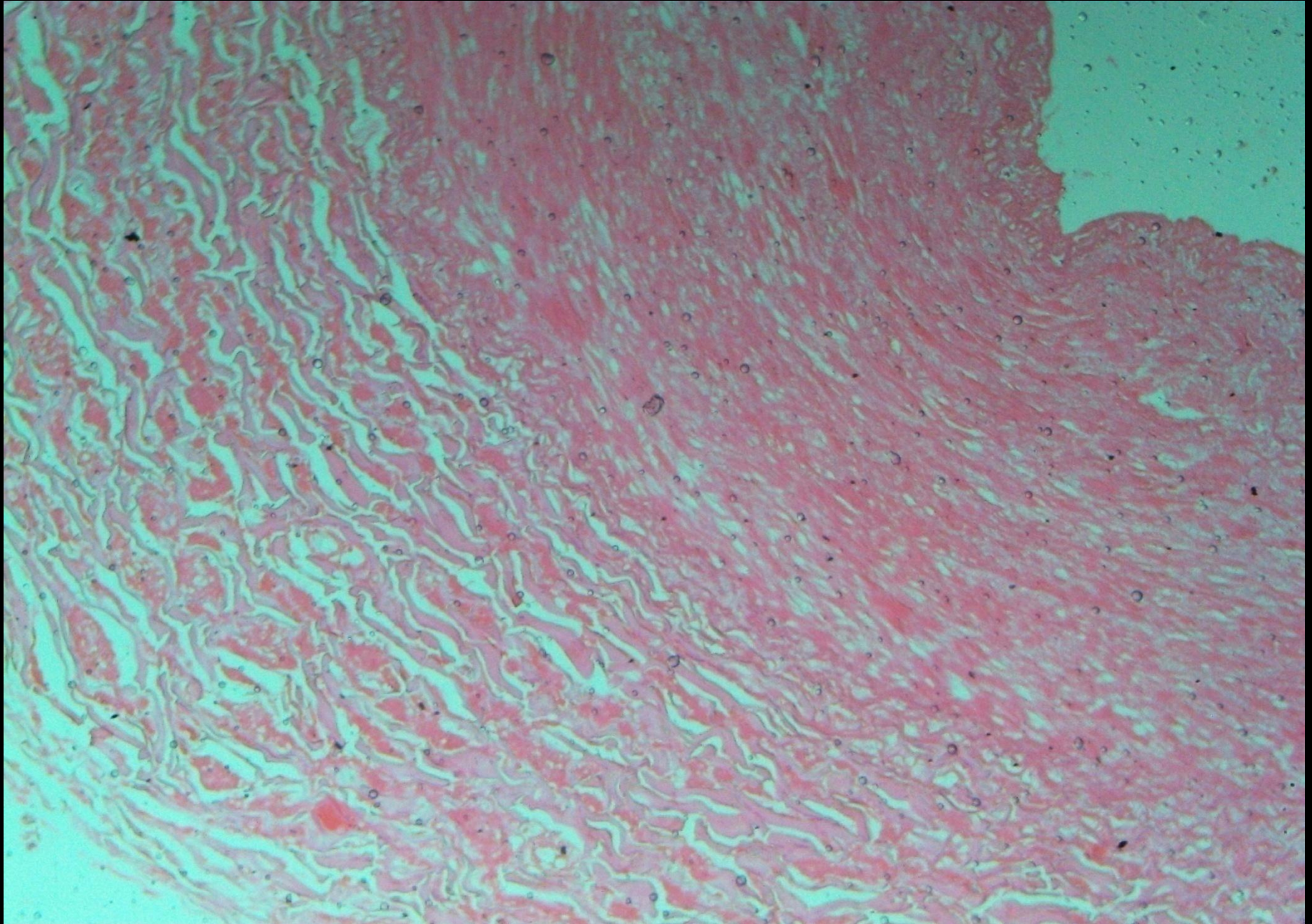
Large vein

1. Three layers tunica media tunica media, tunic adventitia is present.

2 .tunica externa thickest with longitudinal fibers present.



Large Artery



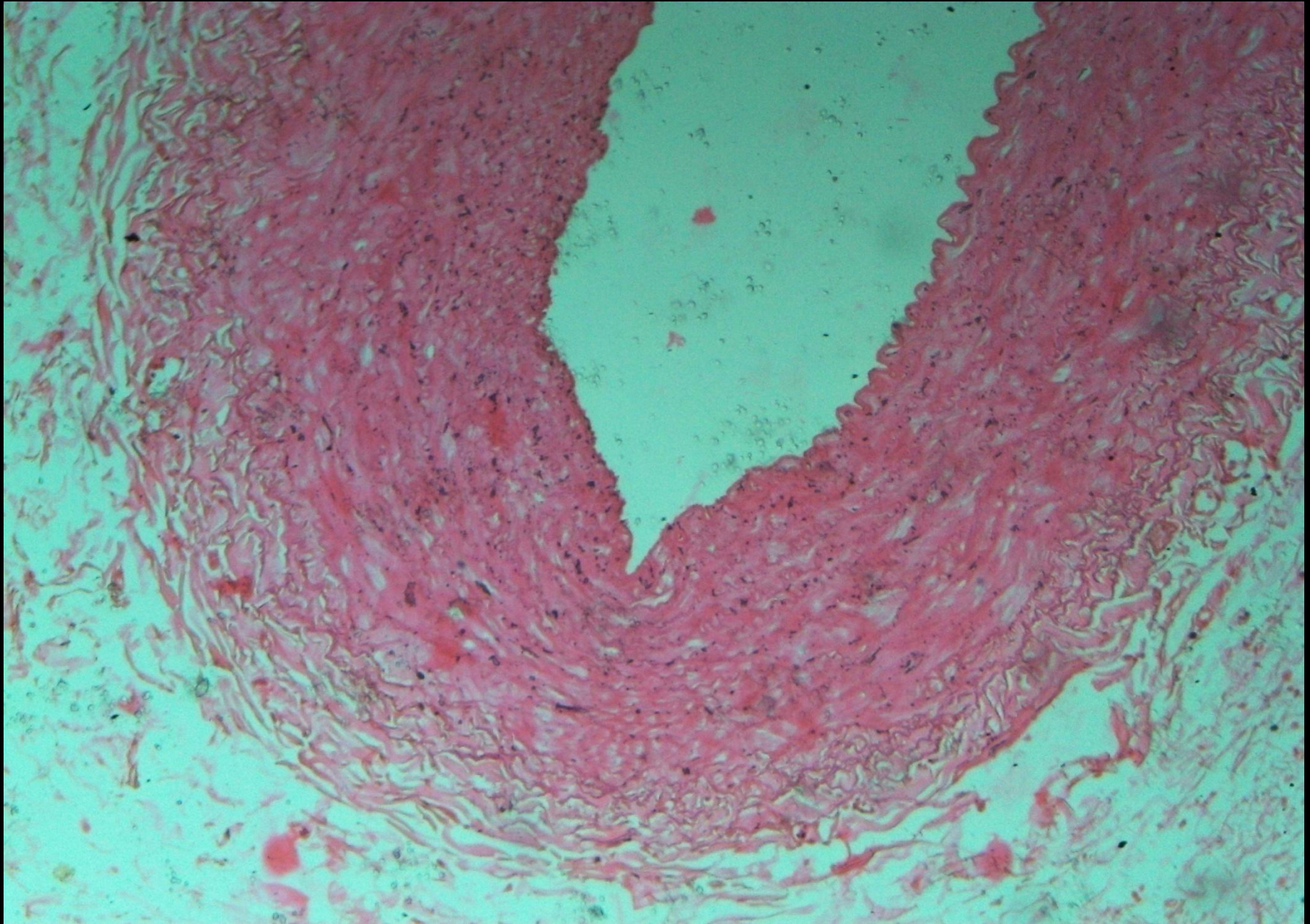
LARGE /ELASTIC ARTERY

Identification Points:

- No distinct outer and inner elastic membranes
- Tunica adventitia: merges with CT, contains vasa vasorum
- Tunica media: elastic fibres are present in a large amount
- Tunica intima: Simple squamous endothelium, subendothelial CT



Medium sized artery



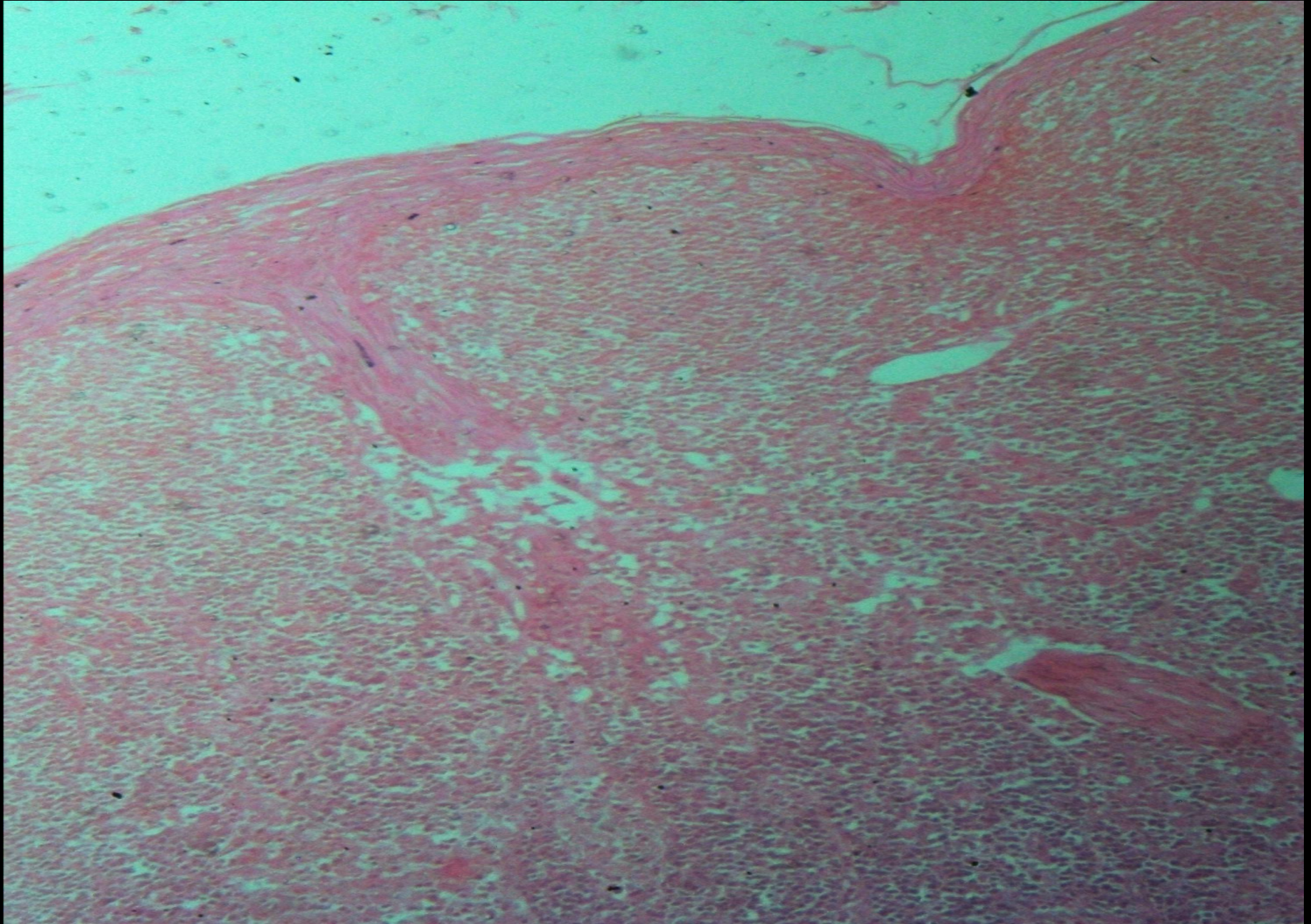
MEDIUM SIZE/MUSCULAR ARTERY

Identification Points:

- Tunica intima: darkly stained
- Tunica media: smooth muscle fibres arranged in circular patterns
- Tunica adventitia: collagen (lightly stained); elastic (darkly stained)



Lymph Node



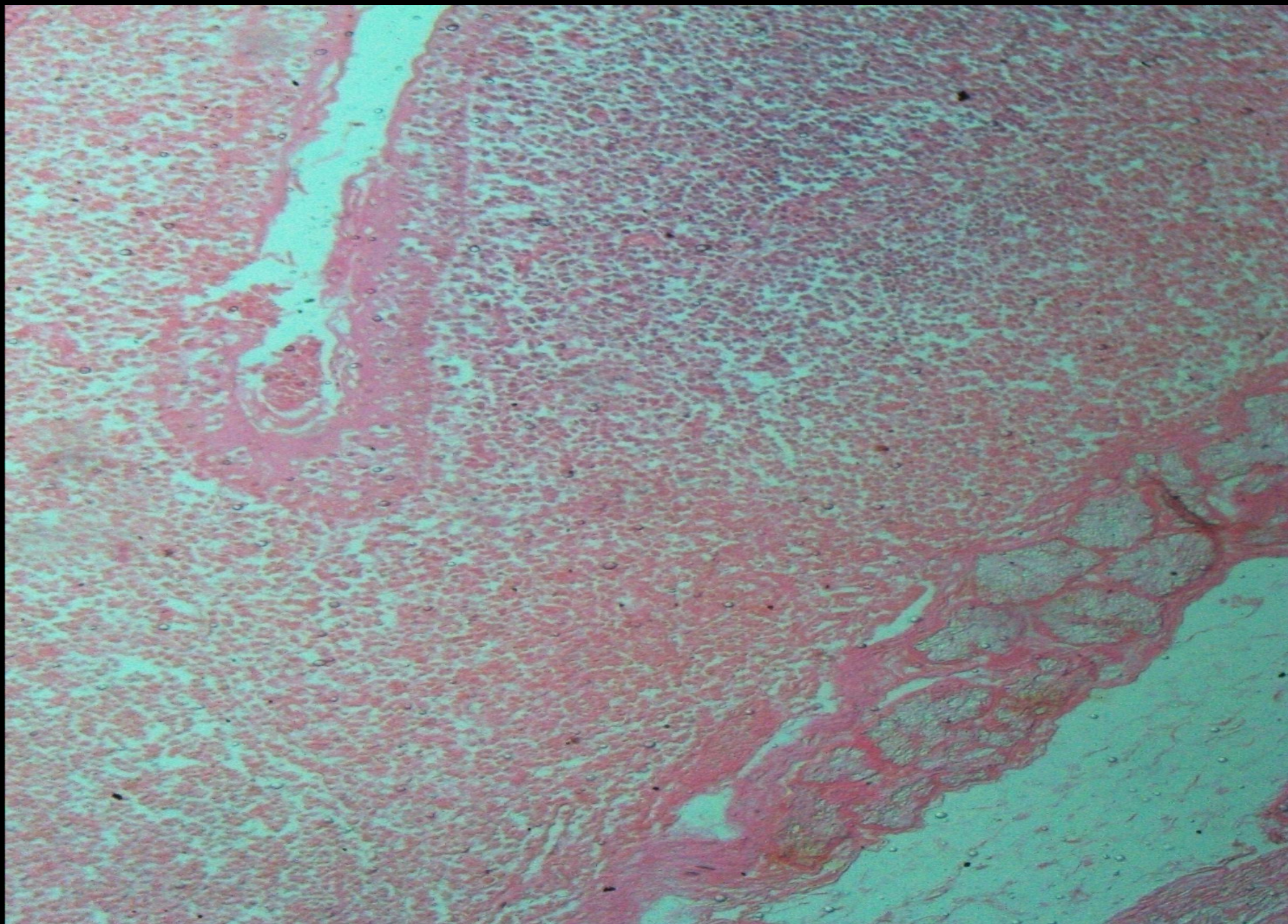
LYMPH NODE

Identification Points:

- Primary follicles/nodules without germinal centre
- Secondary follicles/nodules with germinal centre
- Irregular anastomosing 'medullary cords'
- Subcapsular sinuses



Palatine Tonsil



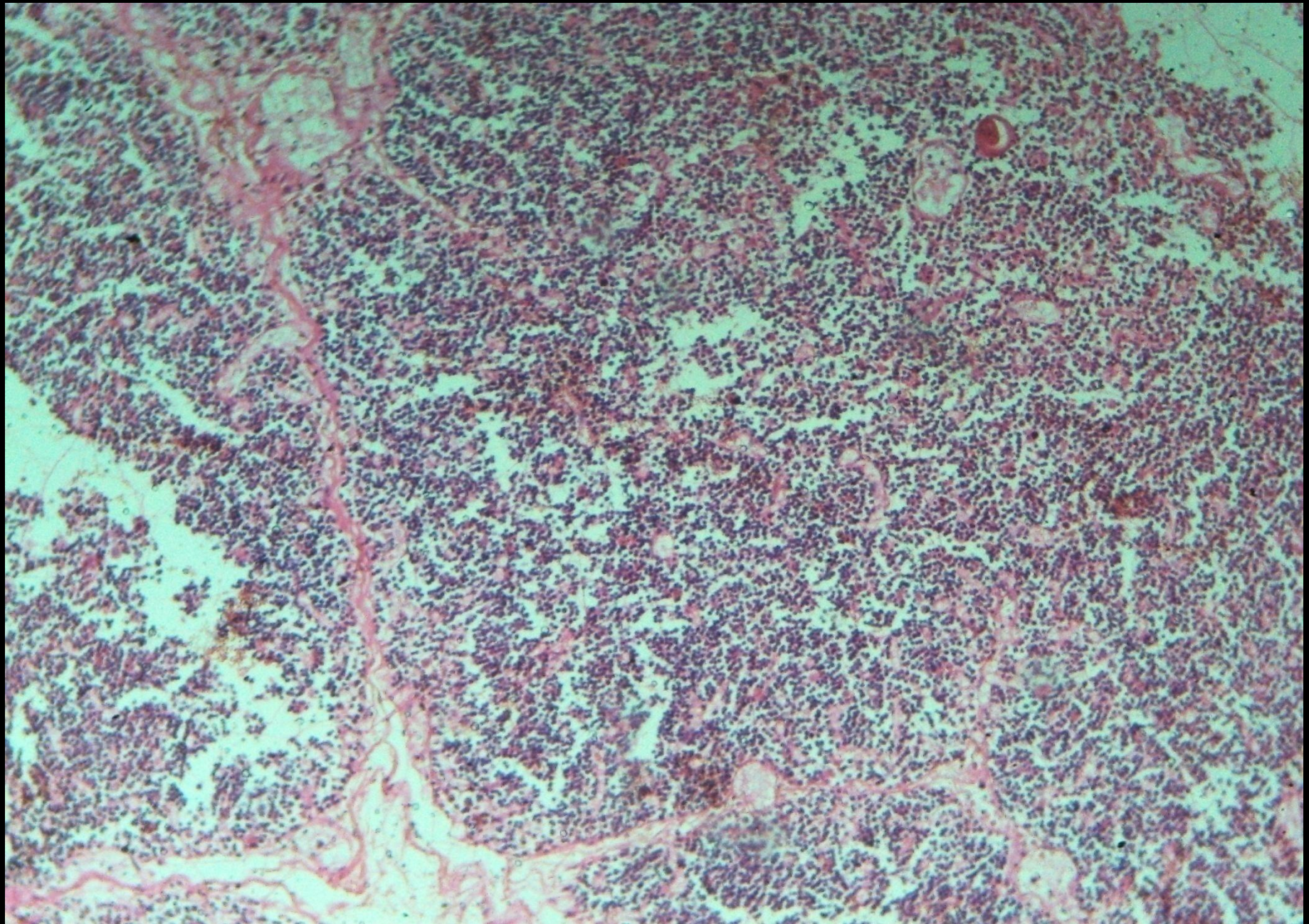
TONSIL

Identification Points:

- Stratified squamous non keratinized epithelium
- Crypt
- Trabeculae
- Lymphatic nodules



Thymus



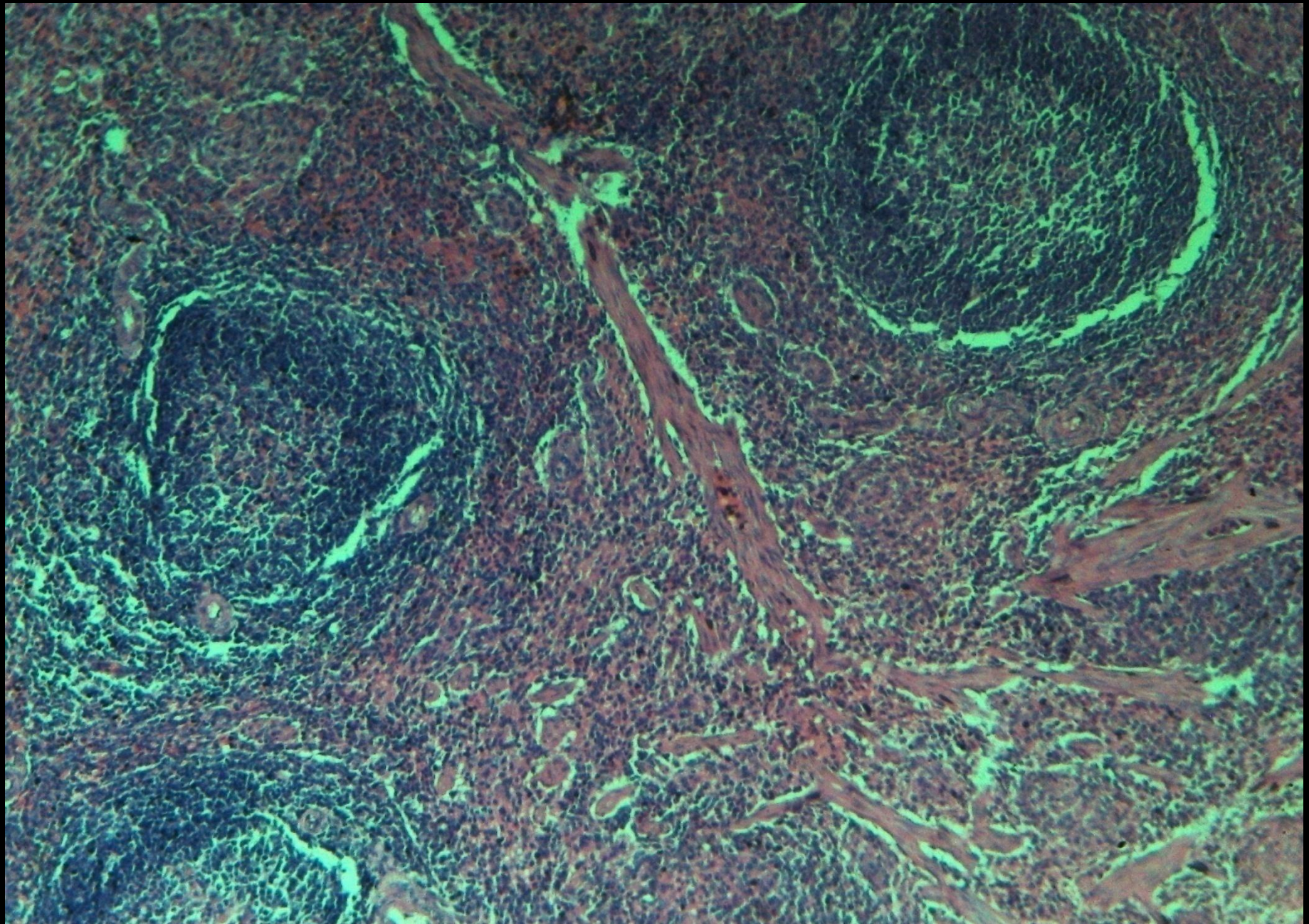
THYMUS

Identification Points:

- Medulla is lightly stained
- Hassall's corpuscles in medulla
- Epithelioreticular cells; stellate shaped



Spleen



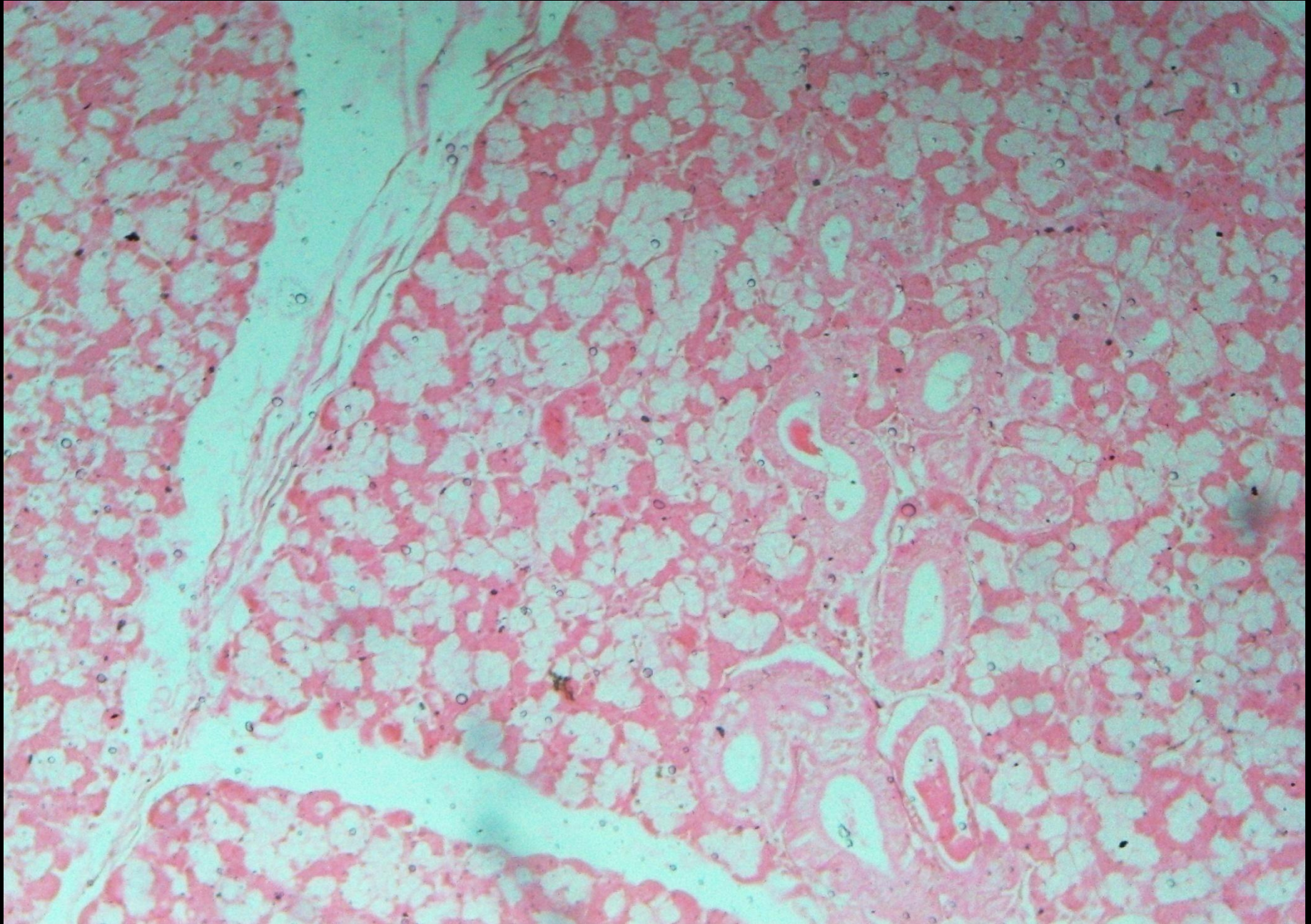
SPLEEN

Identification Points:

- Red pulp: splenic cord and venous sinuses
- White pulp: contains lymphatic nodules and germinal centre
- Splenic sinuses
- No differentiation into cortex and medulla



Mixed Salivary Gland

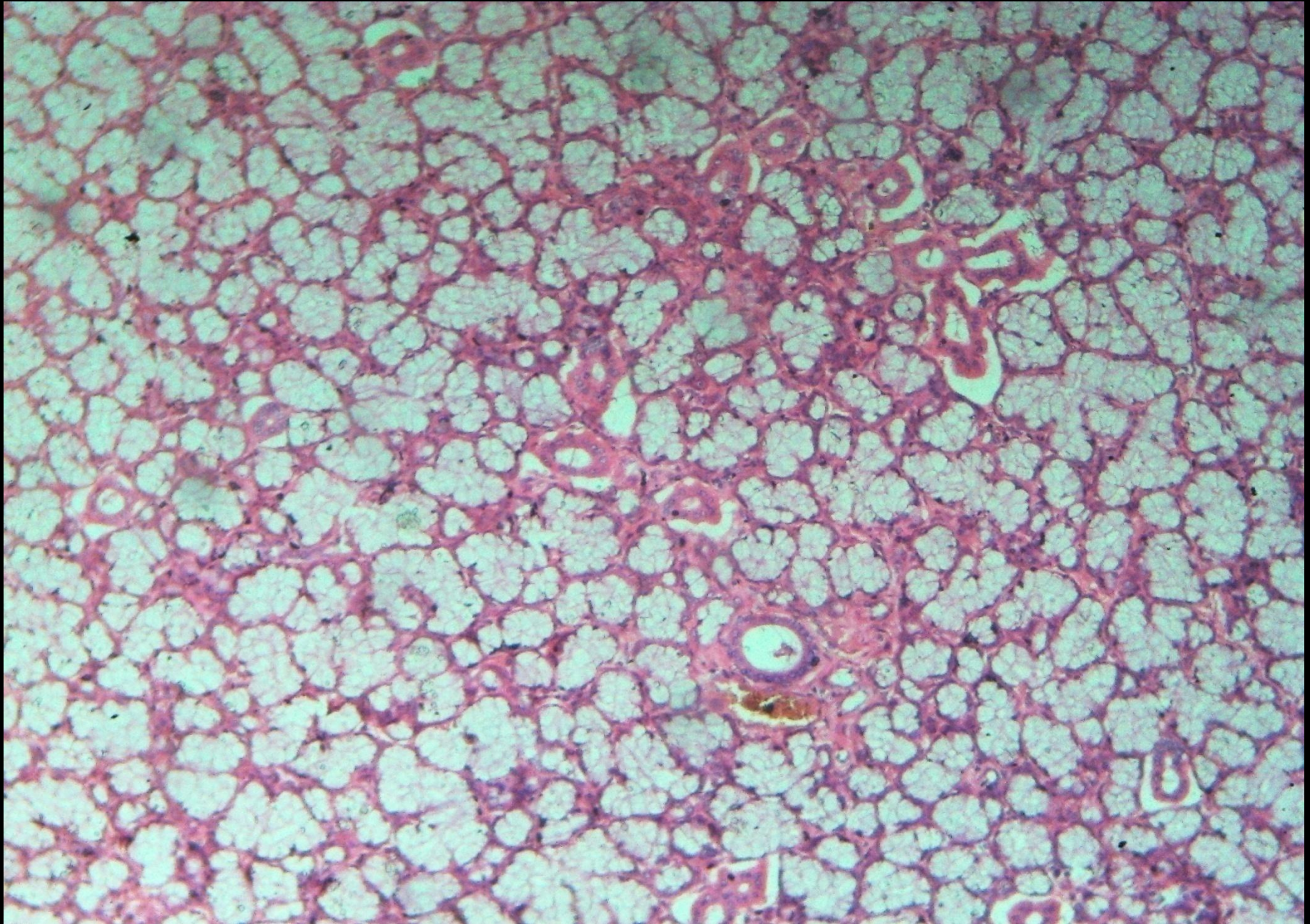


MIXED SALIVARY GLAND :

1. Serous acini with biphasic staining of pyramid cells.
2. Mucous acini with empty looking larger and flat basal nucleus and lumen are seen.
3. Serous demilunes capping mucous acini seen.



Mucous Salivary Gland

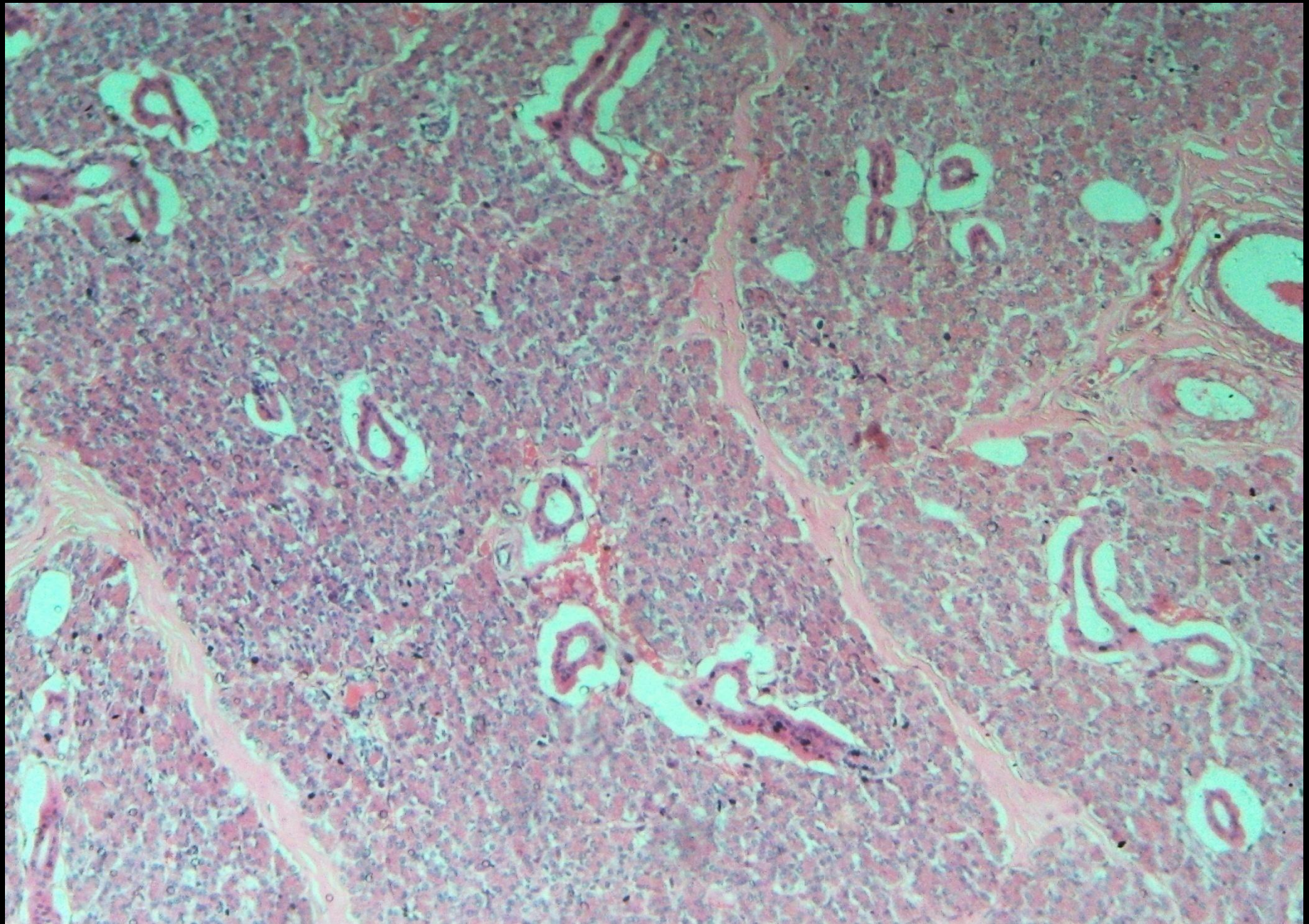


MUCOUS SALIVARY GLAND

- 1.empty looking larger mucous acini with flat basal nuclei and large lumen.
- 2.interlobular ducts present



Serous Salivary Gland



SEROUS SLIVARY GLAND

1. Serous acini with biphasic staining of pyramidal cells.
2. Striated and interlobular ducts seen.



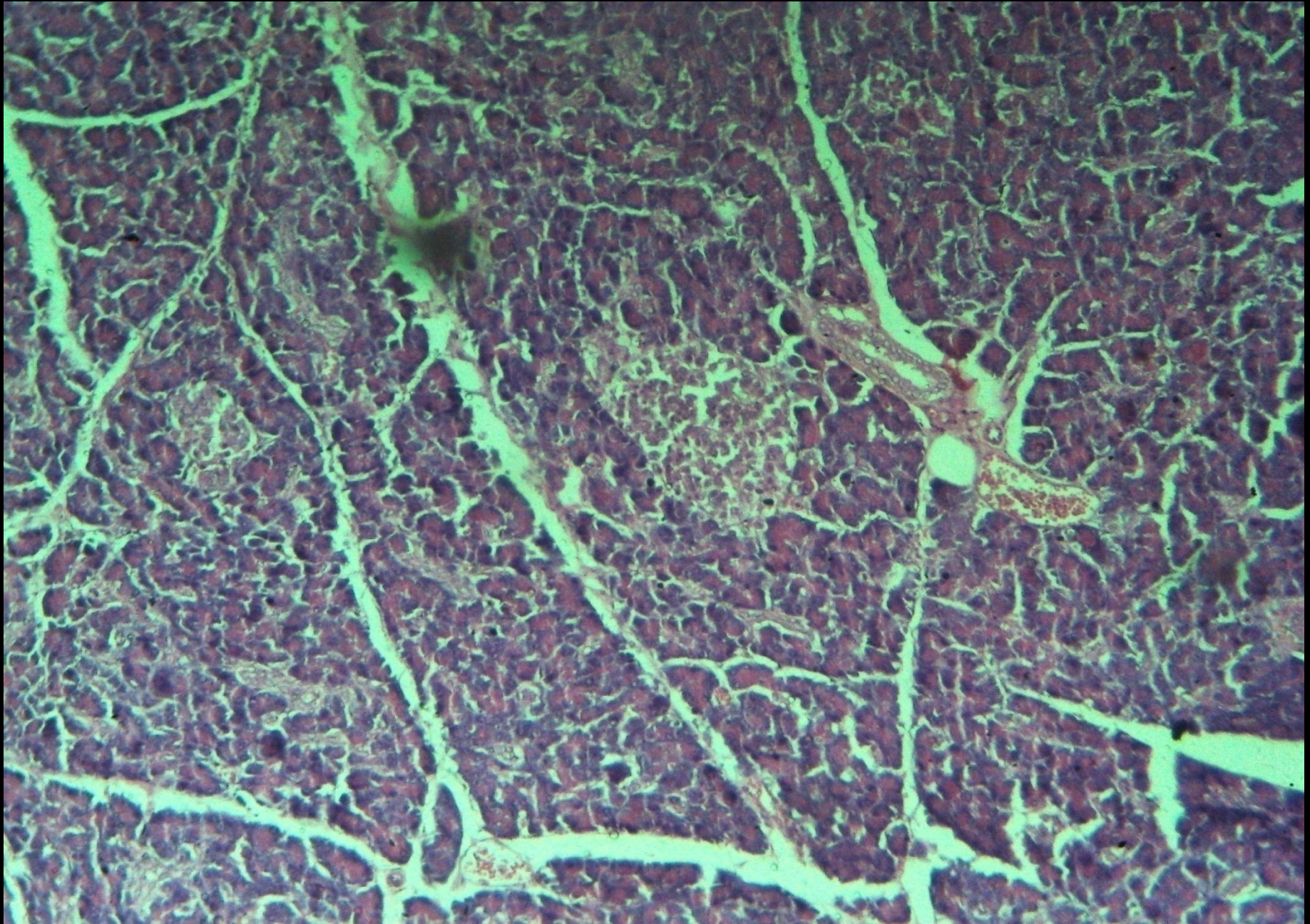
SYSTEMIC HISTOLOGY



DIGESTIVE SYSTEM



Pancreas

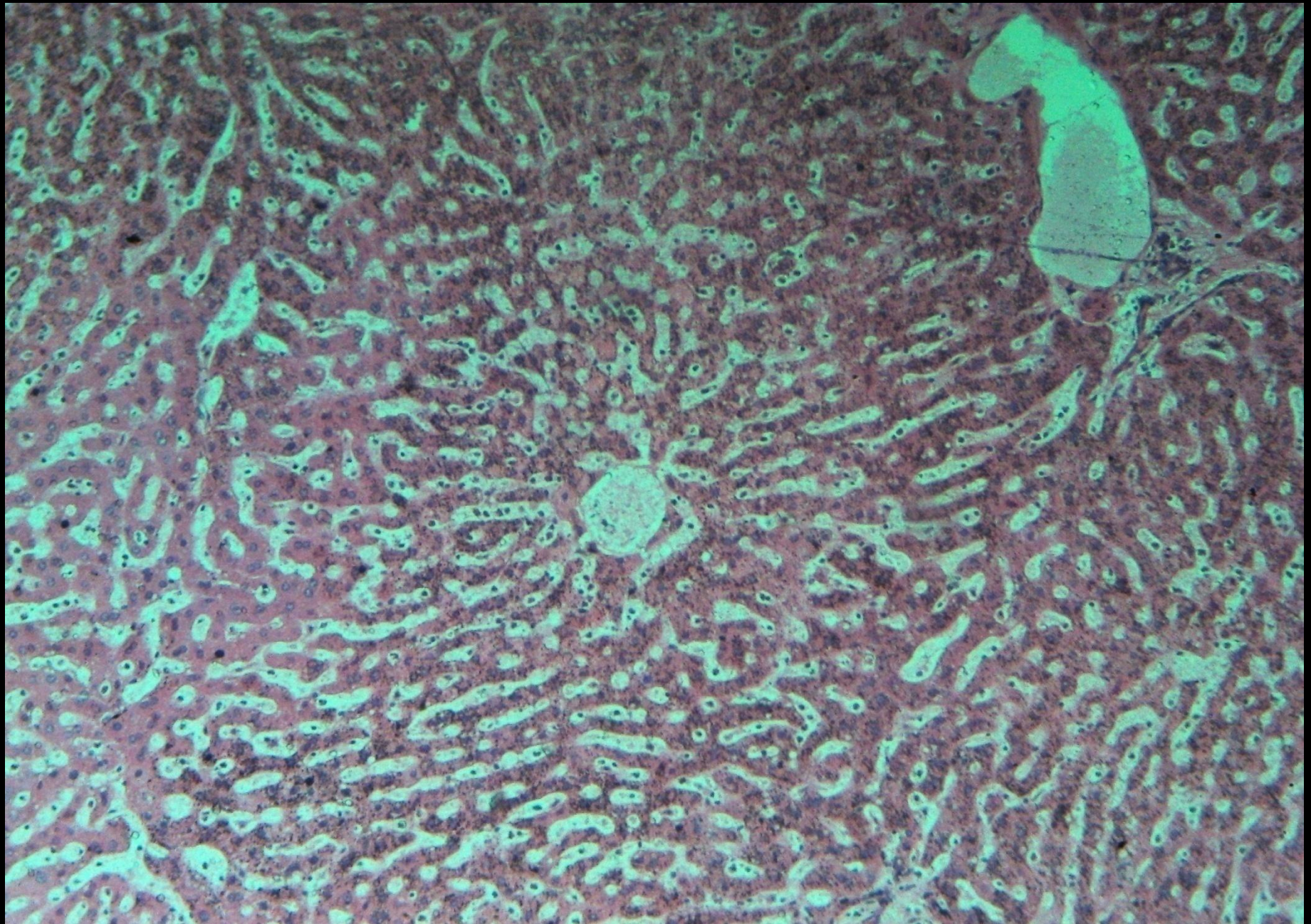


PANCREAS

- 1.serous acini with biphasic stain and centroacinar cells
- 2.islets of Langerhans seen



Liver

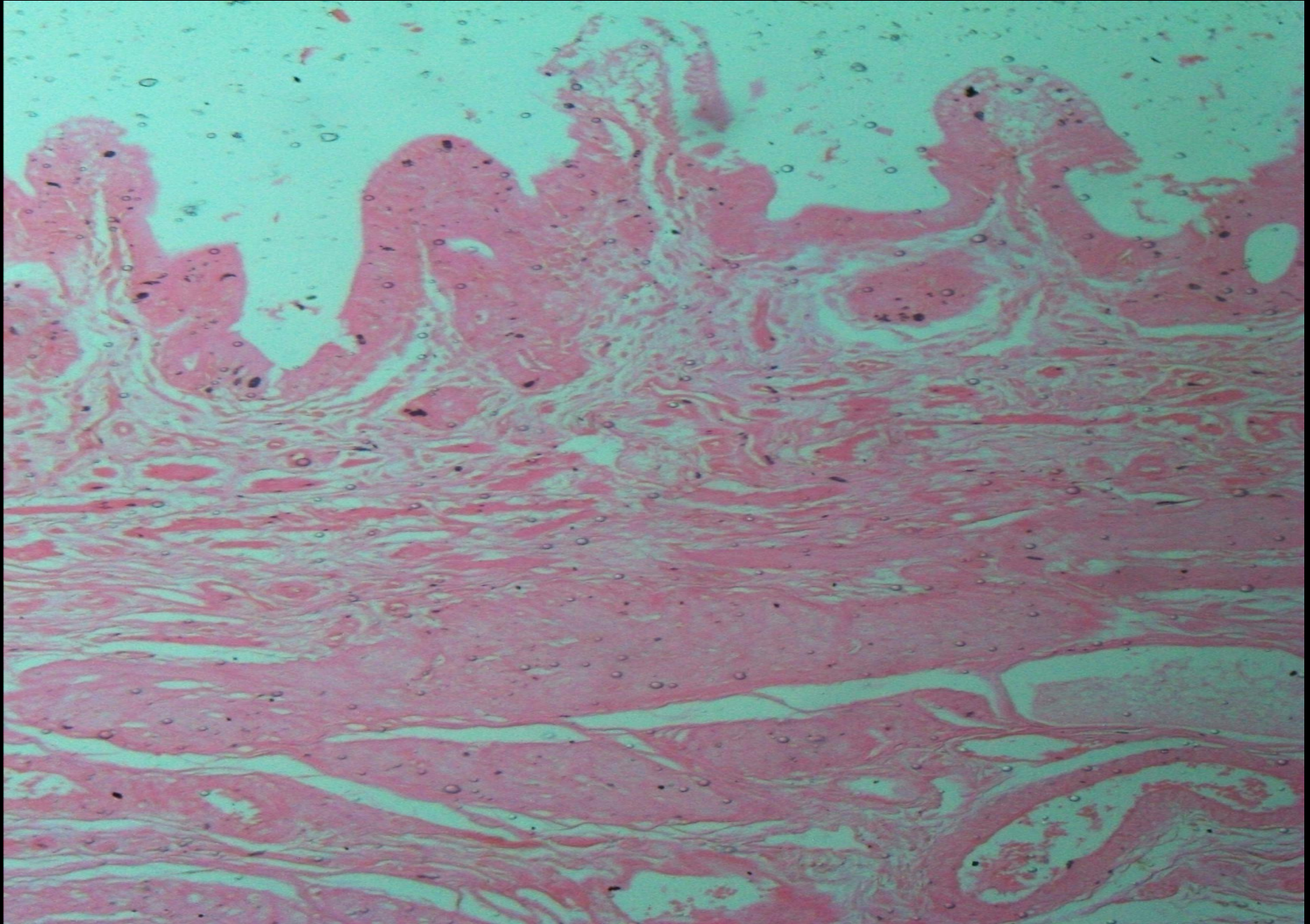


LIVER

1. hexagonal-shaped hepatic lobules with central vein and radiating hepatocytes with sinusoids in between seen
2. portal traid—containing branch of portal vein, hepatic artery and bile ductule present at the corners of lobules seen



Gall Bladder

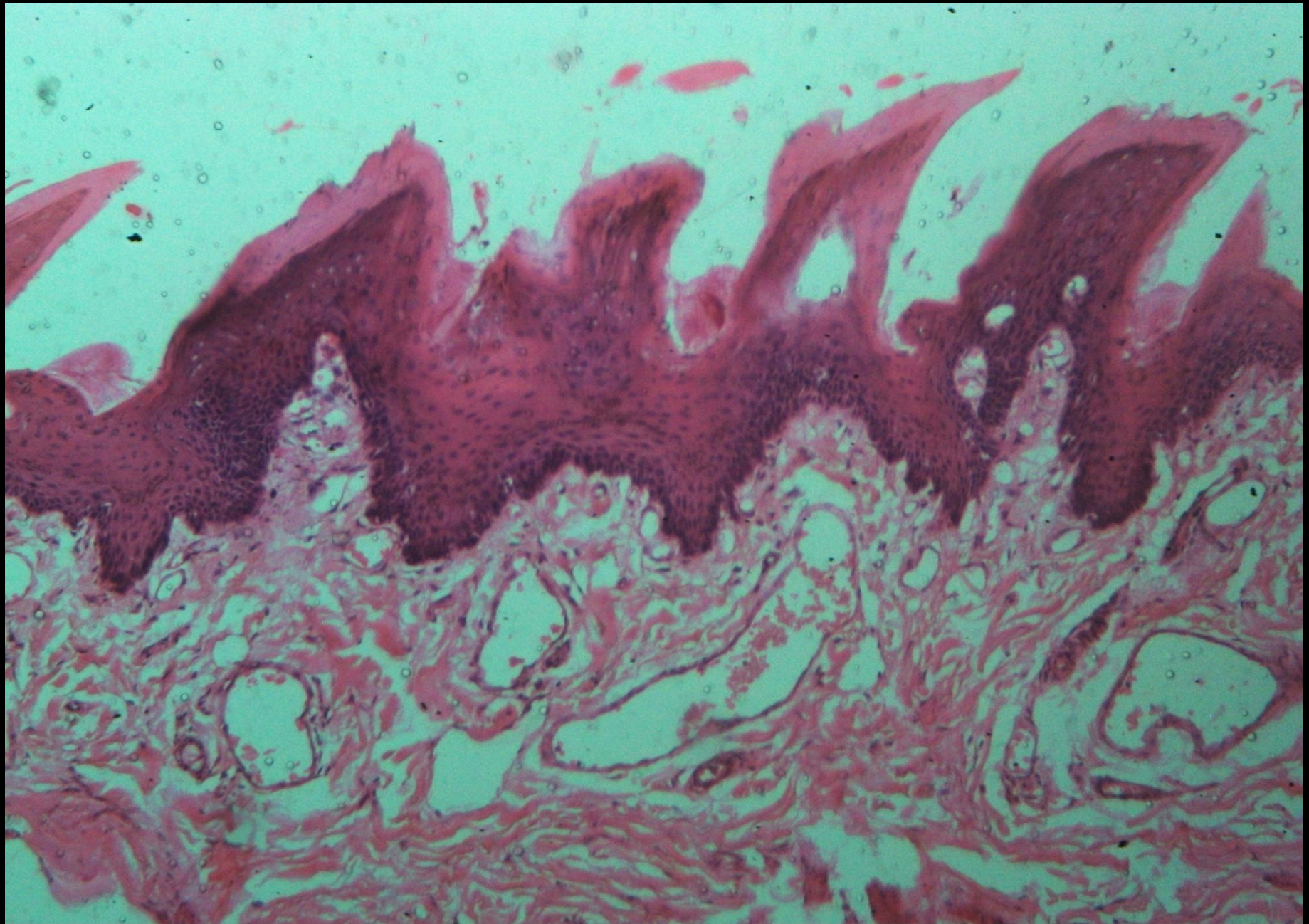


GALLBLADDER

- 1.mucosa thrown into folds lined by simple tall columnar epithelium with brush border
- 2.fibromuscular wall seen



Tongue

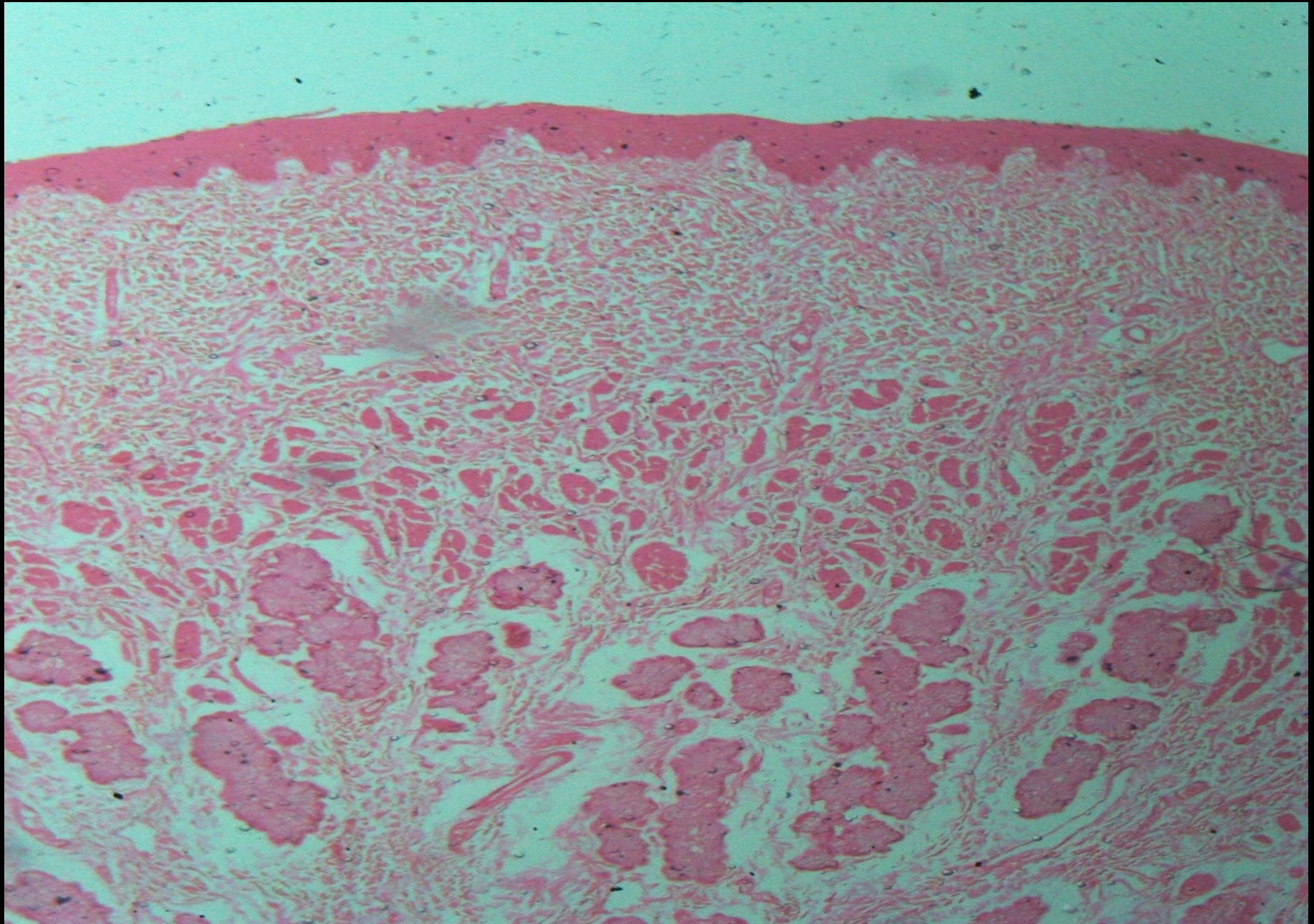


Tongue

- 1.surface lined by stratified squamous non keratinized epithelium
- 2.surface shows projections called papillae
- 3.three types of papillae are-circumvallate/fungiform/filiform
- 4.circumvallate and fungiform papillae contain taste buds
- 5.cut sections of muscles and seromucous glands seen



Oesophagus

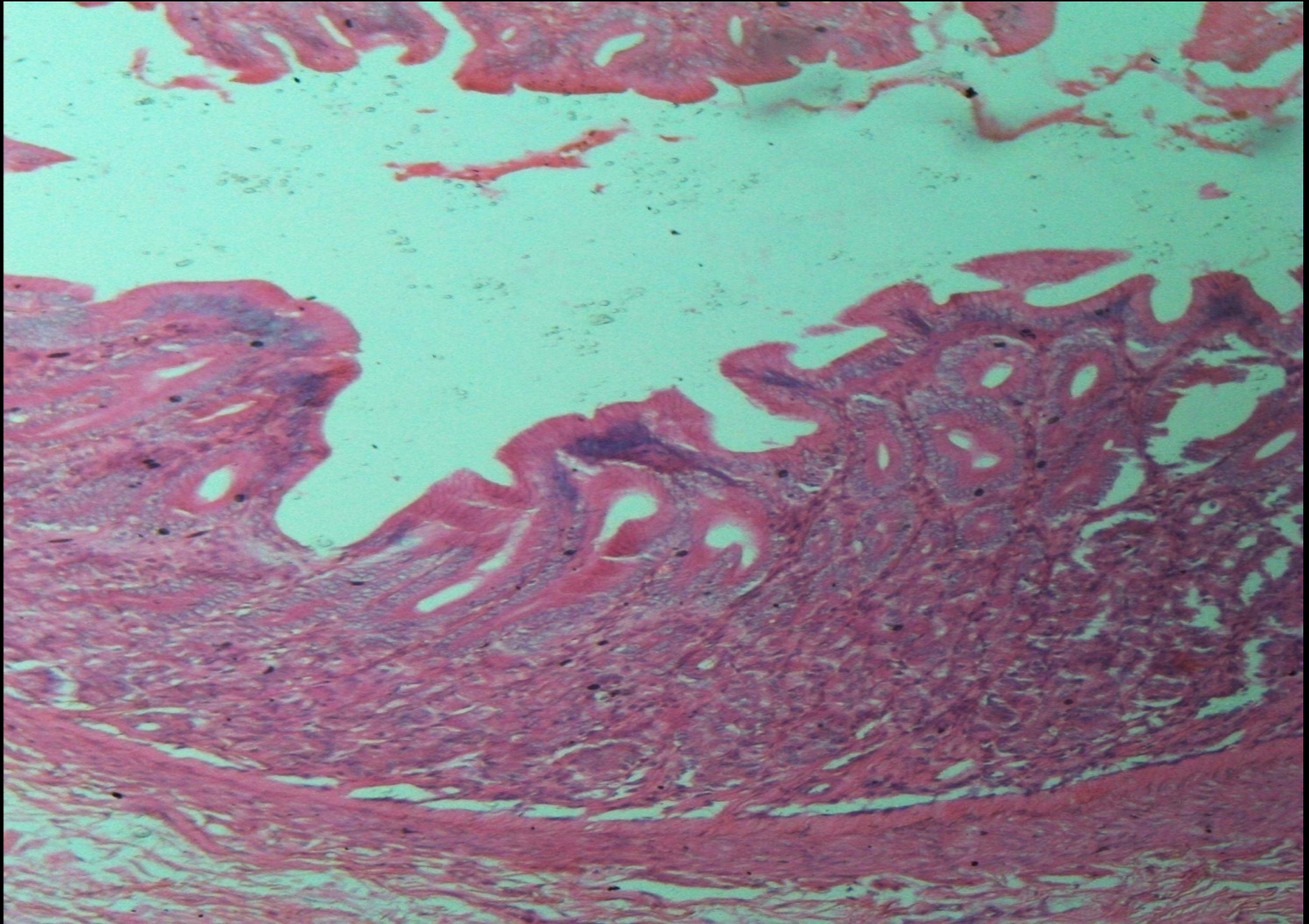


ESOPHAGUS

- 1.mucosa lined by non keratinized stratified squamous epithelium
- 2.mucus secreting esophageal glands in the submucosal layer



Stomach Fundus

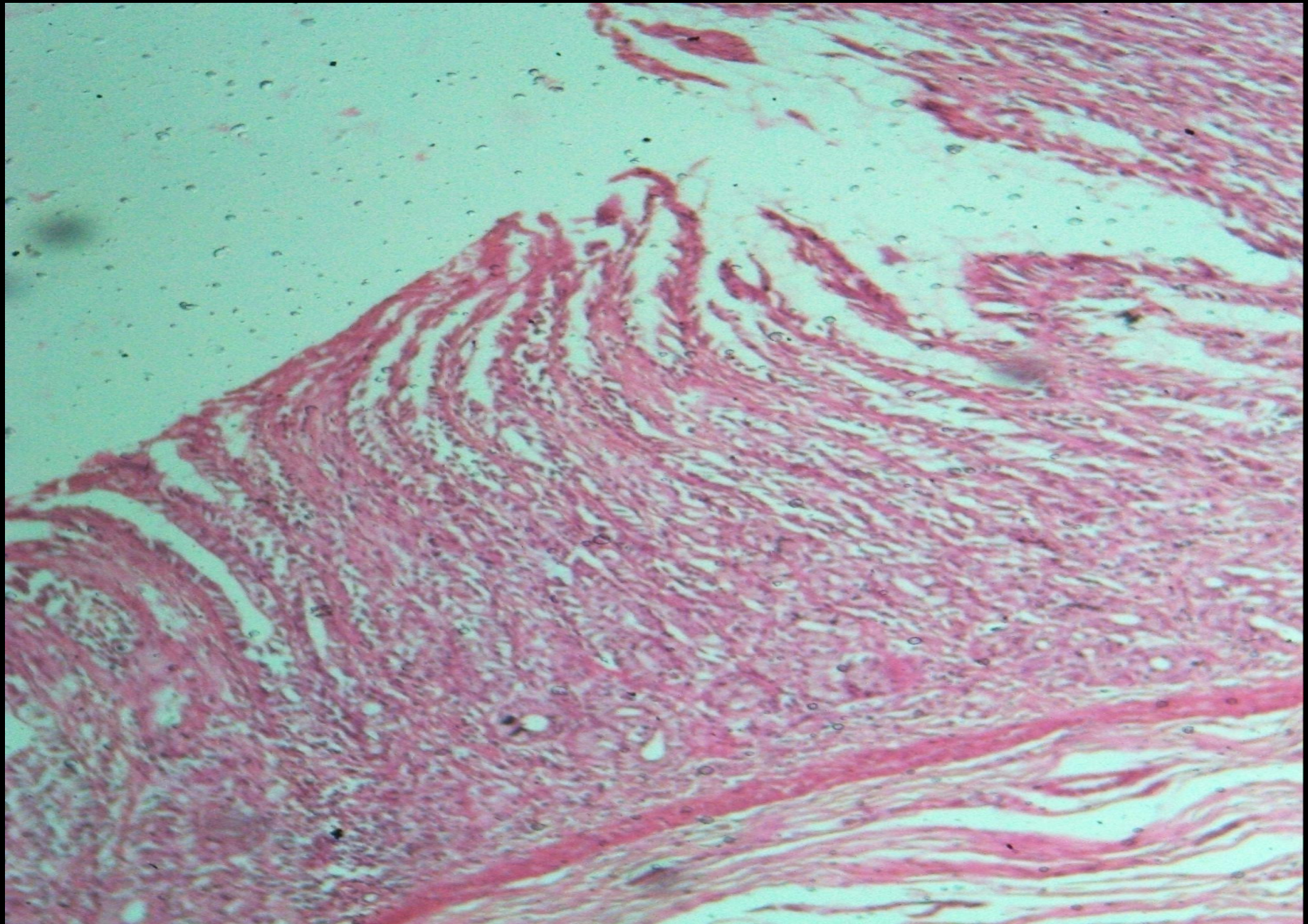


STOMACH:FUNDUS AND BODY

- 1.mucosal lining is simple columnar epithelium
- 2.shallow gastric pits present
3. Lamina propria filled with deep straight tubular glands with parietal and chief cells



Stomach Pylorus

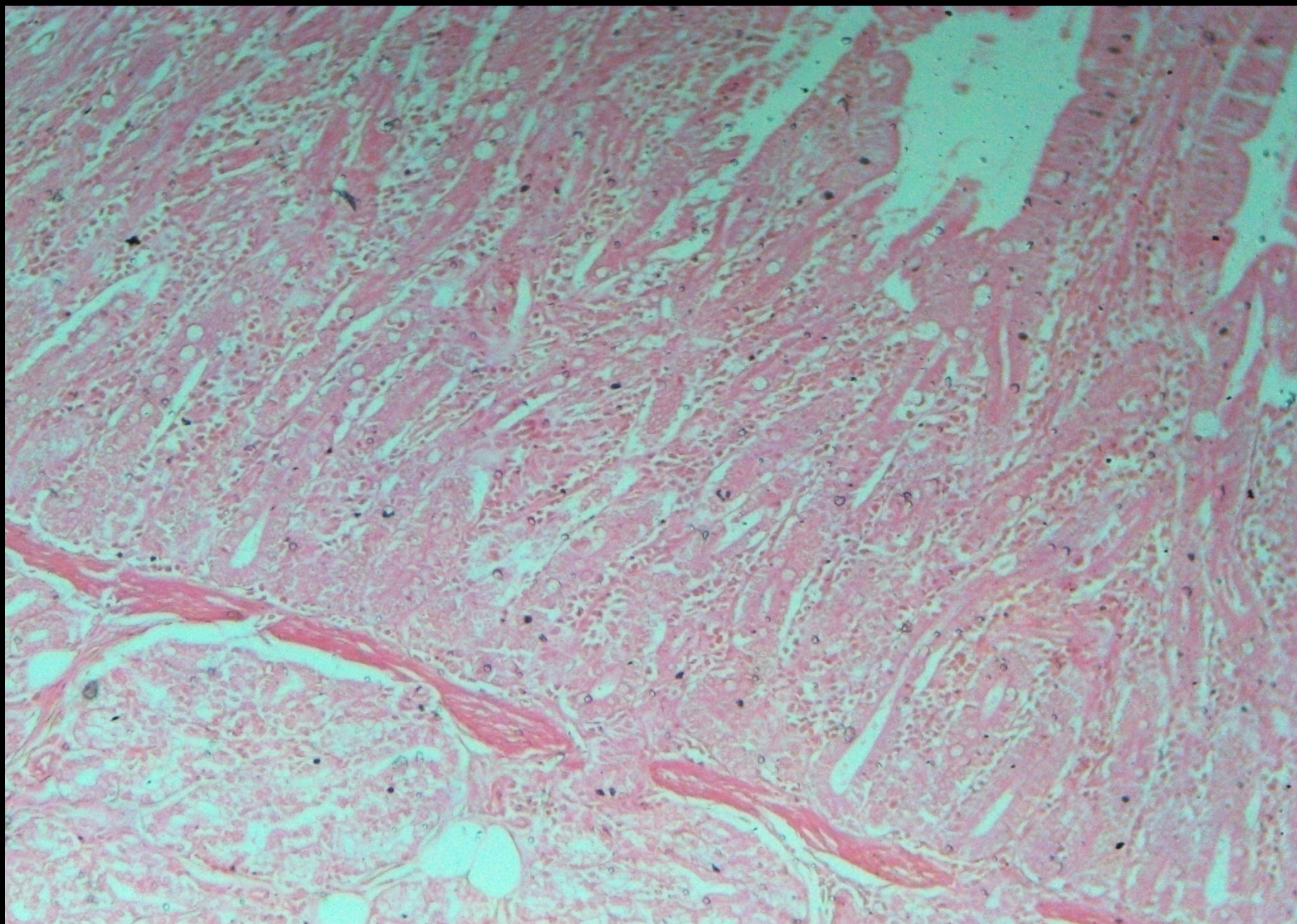


STOMACH:PYLORUS

- 1.mucosal lining is simple columnar epithelium
- 2.deep gastric pits
- 3.lamina propria filled with coiled tubular glands



Duodenum

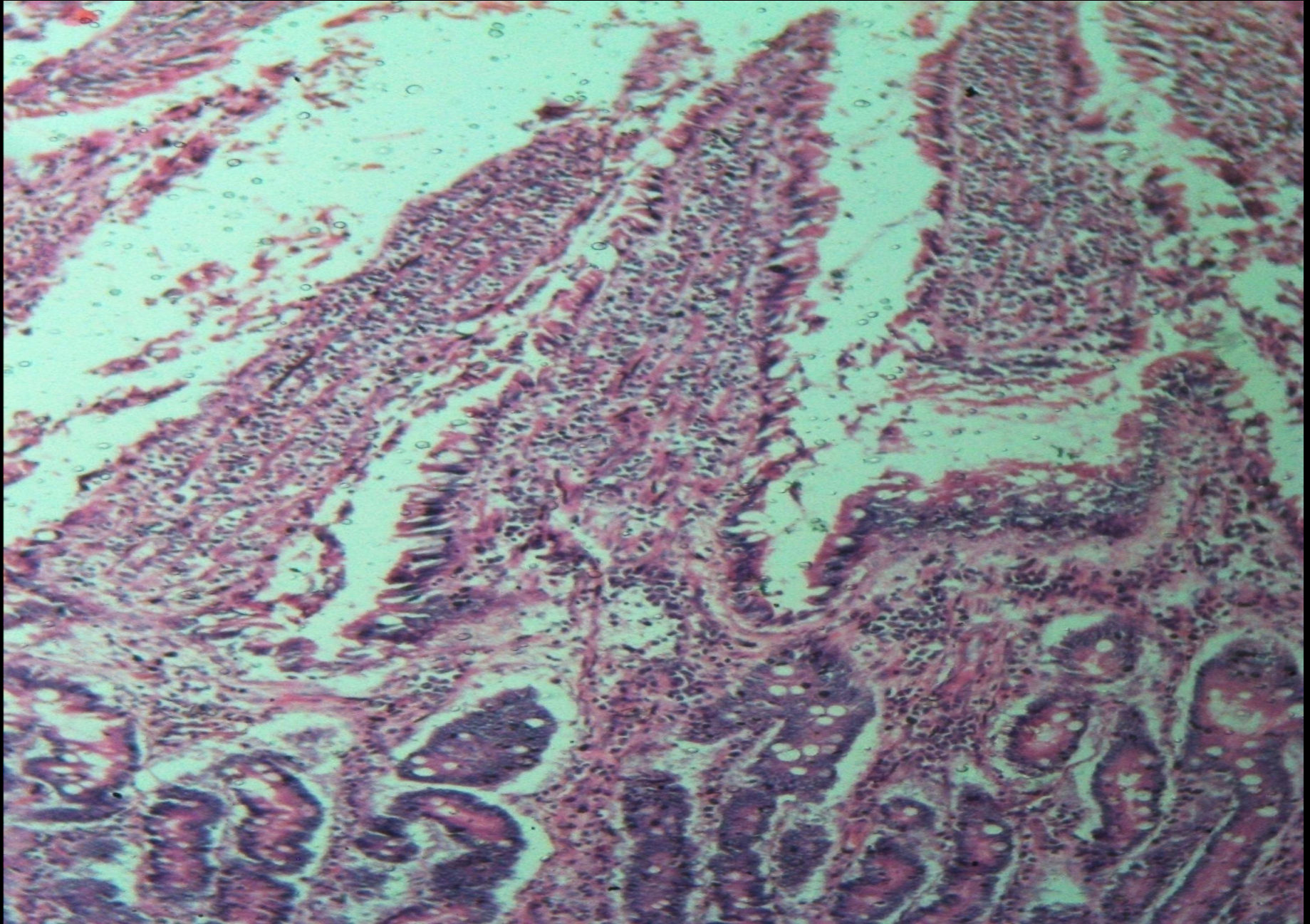


DUODENUM

- 1.mucosal villi,lined by columnar epithelium with microvilli(brush border)and goblet cells
- 2.submucosal brunner's glands present



Jejunum

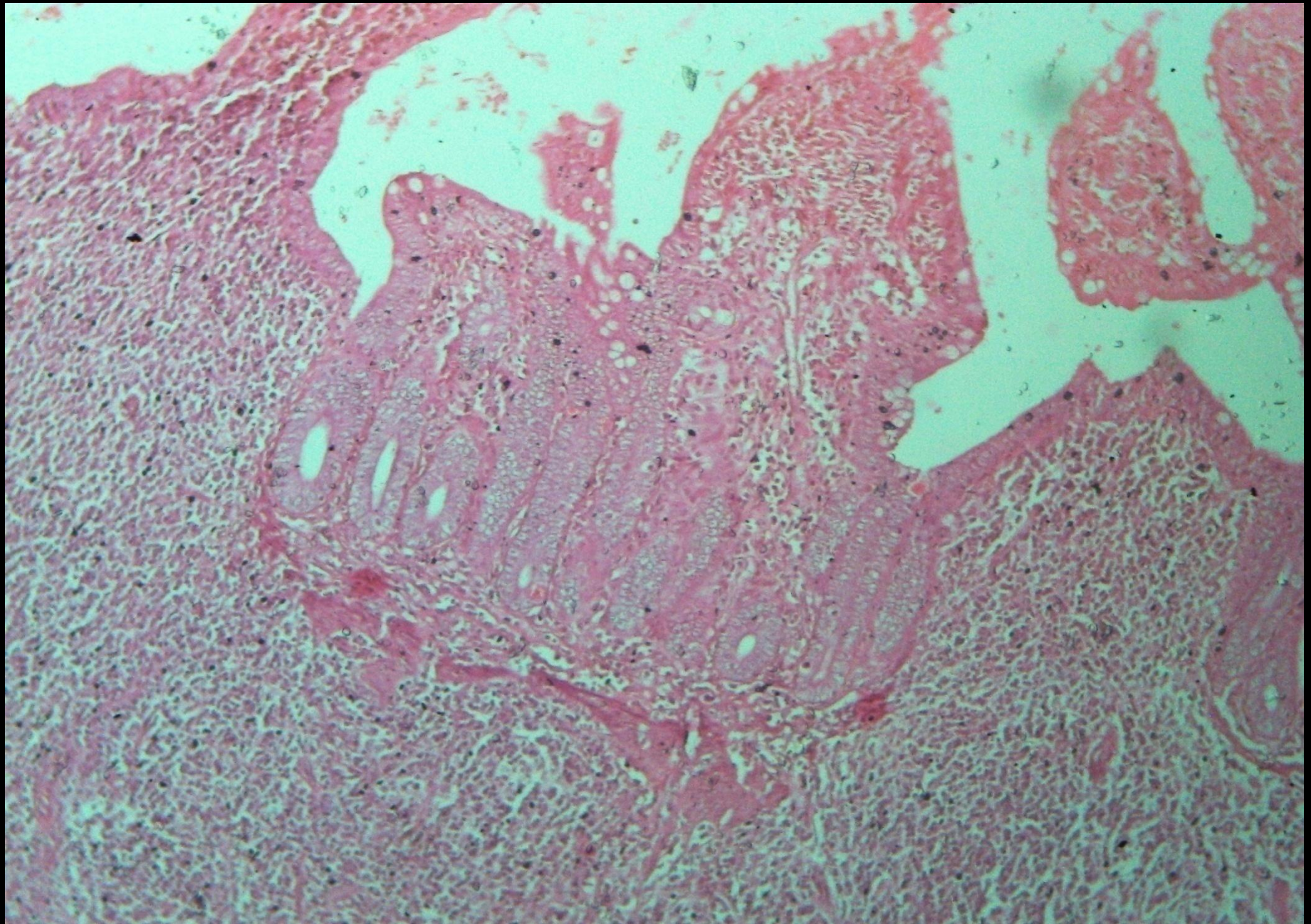


JEJUNUM

- 1.mucosal villi,lined by columnar epithelium with microvilli(brush border) and lots of goblet cells
- 2.intestinal glands(crypts of lieberkiihn)present
- 3.no submucosal glands or Peyer's patch



lieum

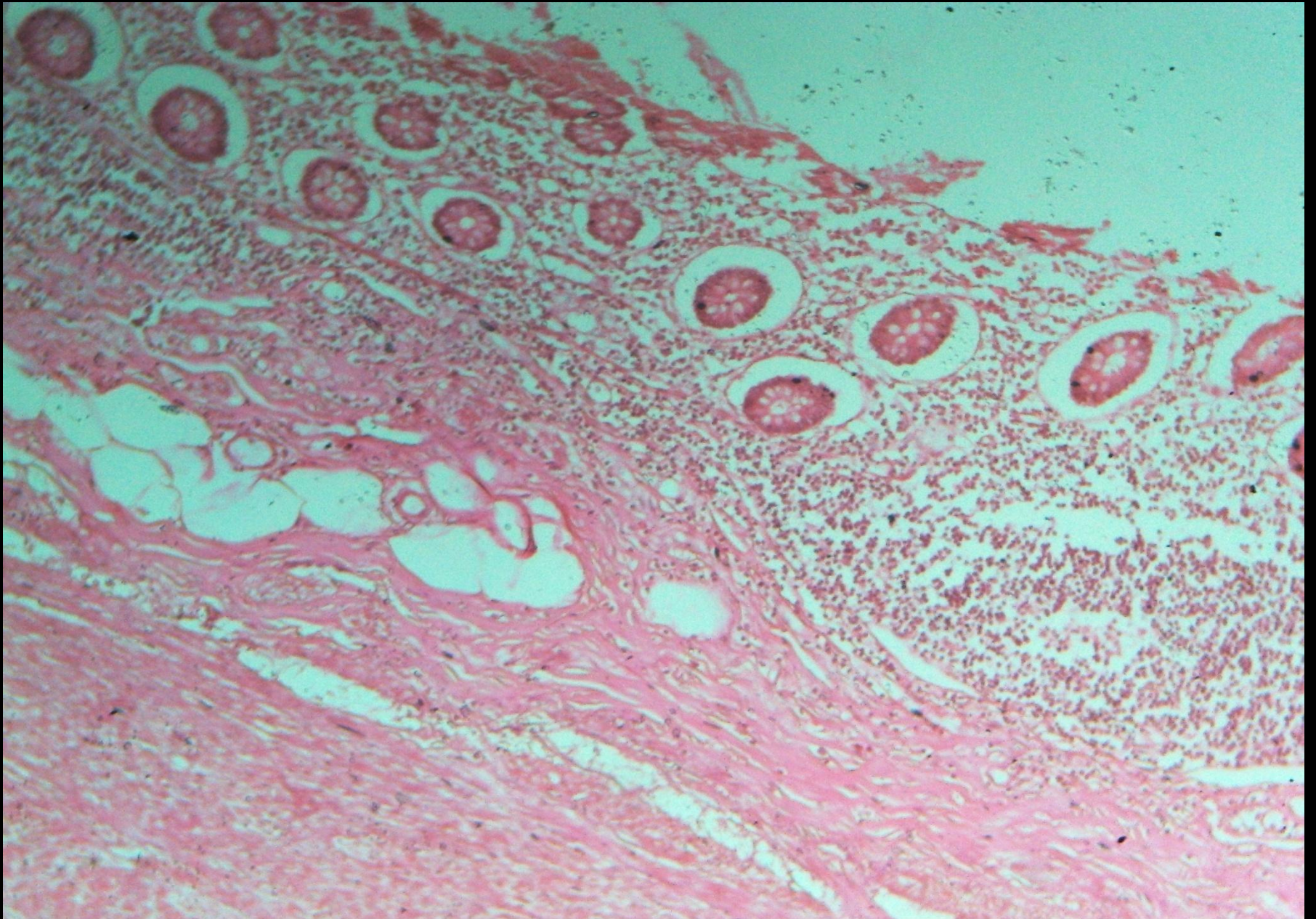


ILEUM

- 1.mucosal villi,lined by columnar epithelium with microvilli (brush border)and lots of goblet cells
- 2.peyer's patch in mucosal layer extending to submucosa



Appendix

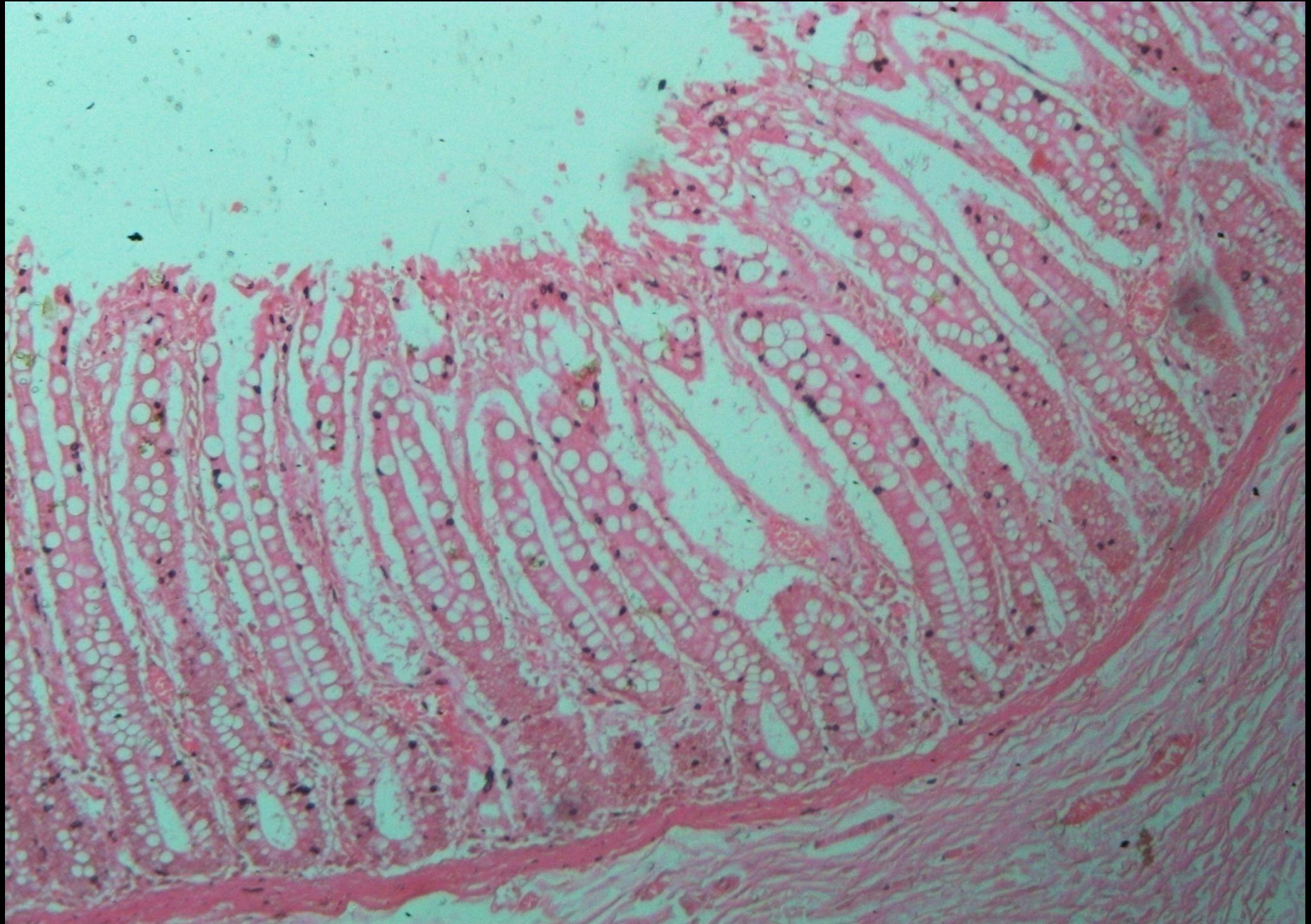


APPENDIX

- 1.lining epithelium is tall columnar with lots of goblet cells
- 2.lamina propria filled with lymphoid follicles and few crypts of lieberkiihn
- 3.no vill, no taenia coil



Large Intestine



LARGE INTESTINE

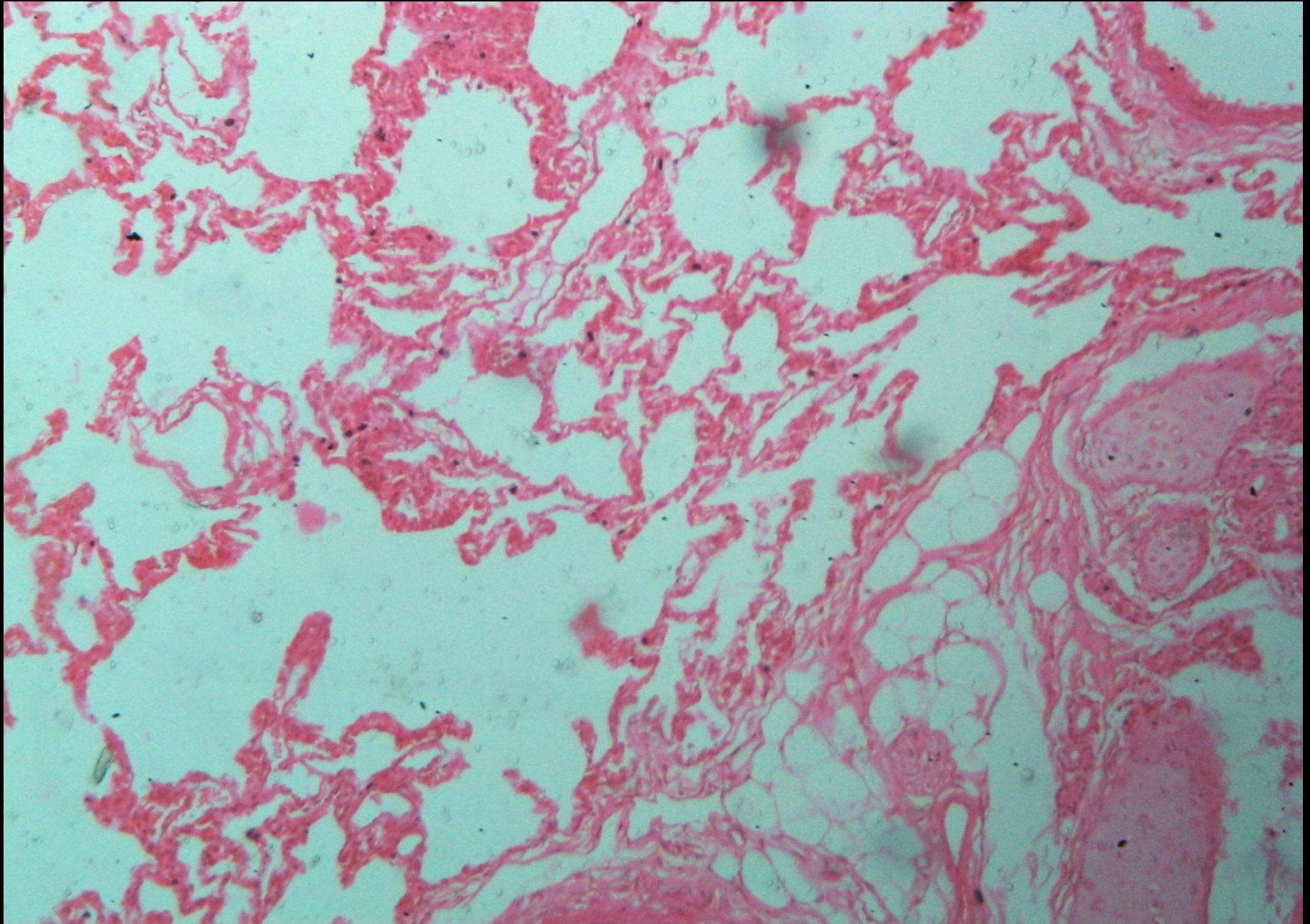
1. lining epithelium is tall columnar with lots of goblet cells
2. lamina propria filled with crypts of lieberkiihn
3. taenia coil in the muscularis externa



RESPIRATORY SYSTEM



Lung

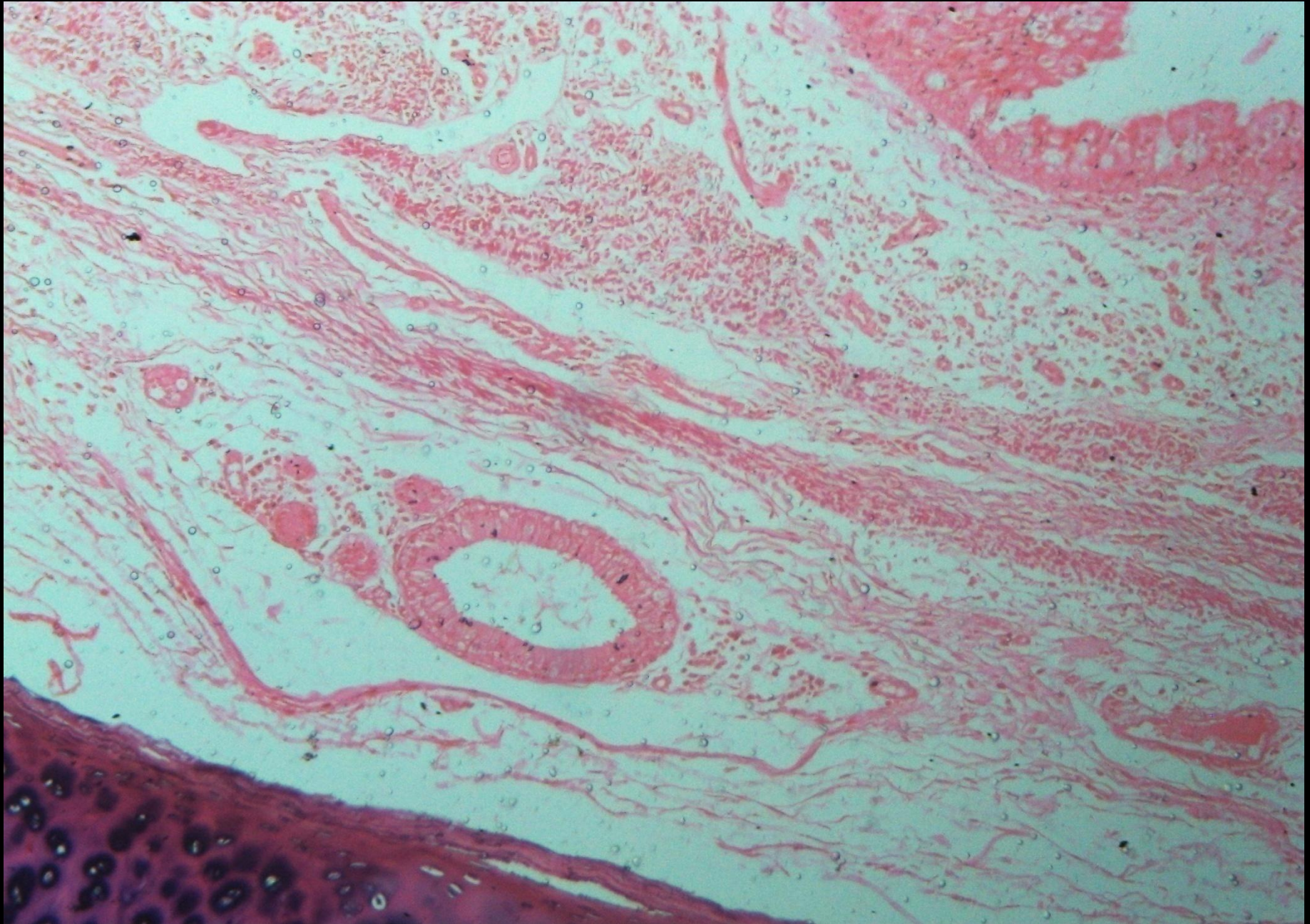


LUNG

1. Cut sections of intrapulmonary bronchi and bronchioles are seen
2. Alveoli lined by Simple Squamous Epithelium



Trachea



TRACHEA-

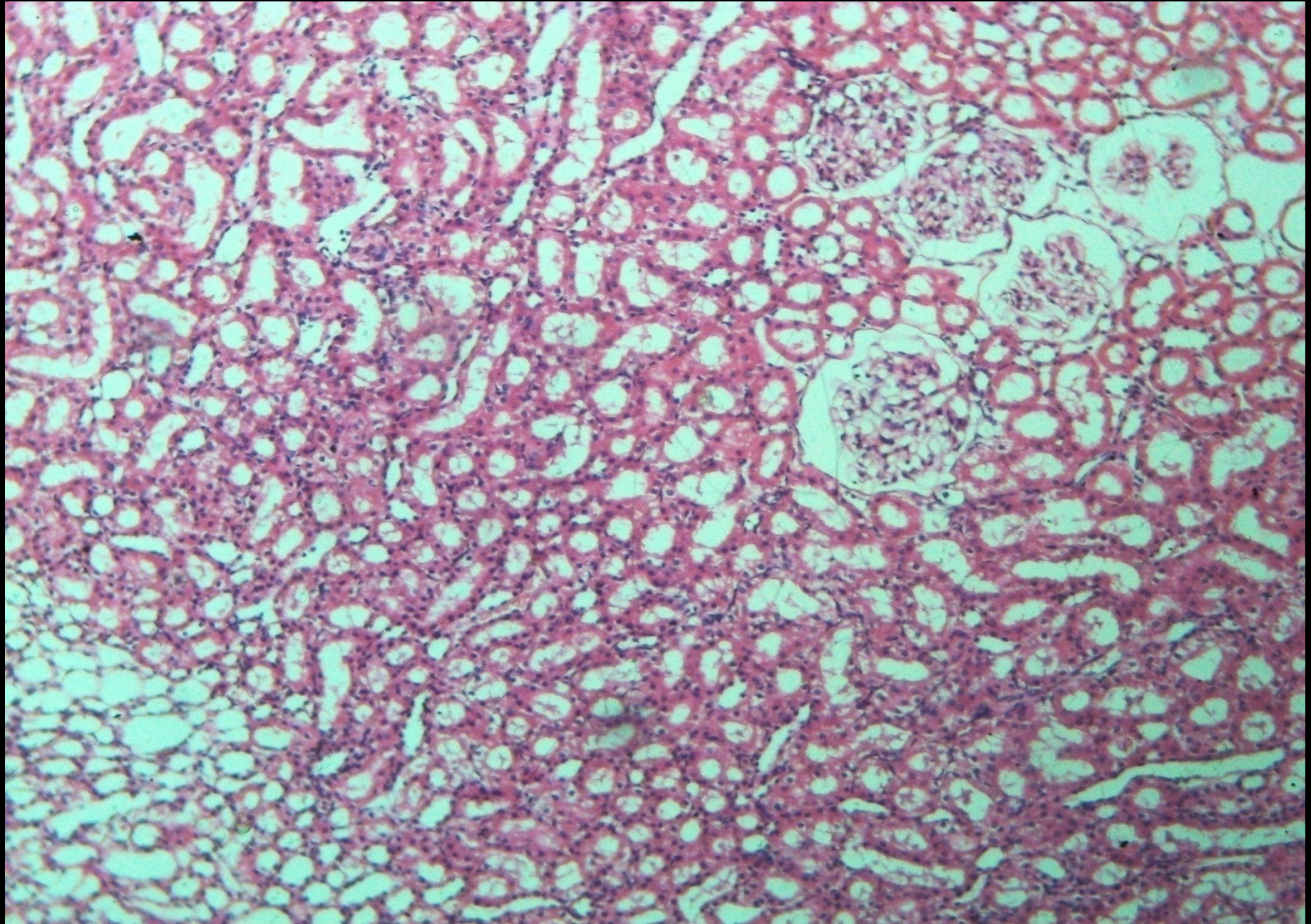
- 1.Pseudostratified ciliated columnar epithelium with goblet cells lines the mucosa
- 2.Serous and mucus glands in the submucosa seen.
- 3.Thick layer of Hyaline Cartilage present.



URINARY SYSTEM



Kidney

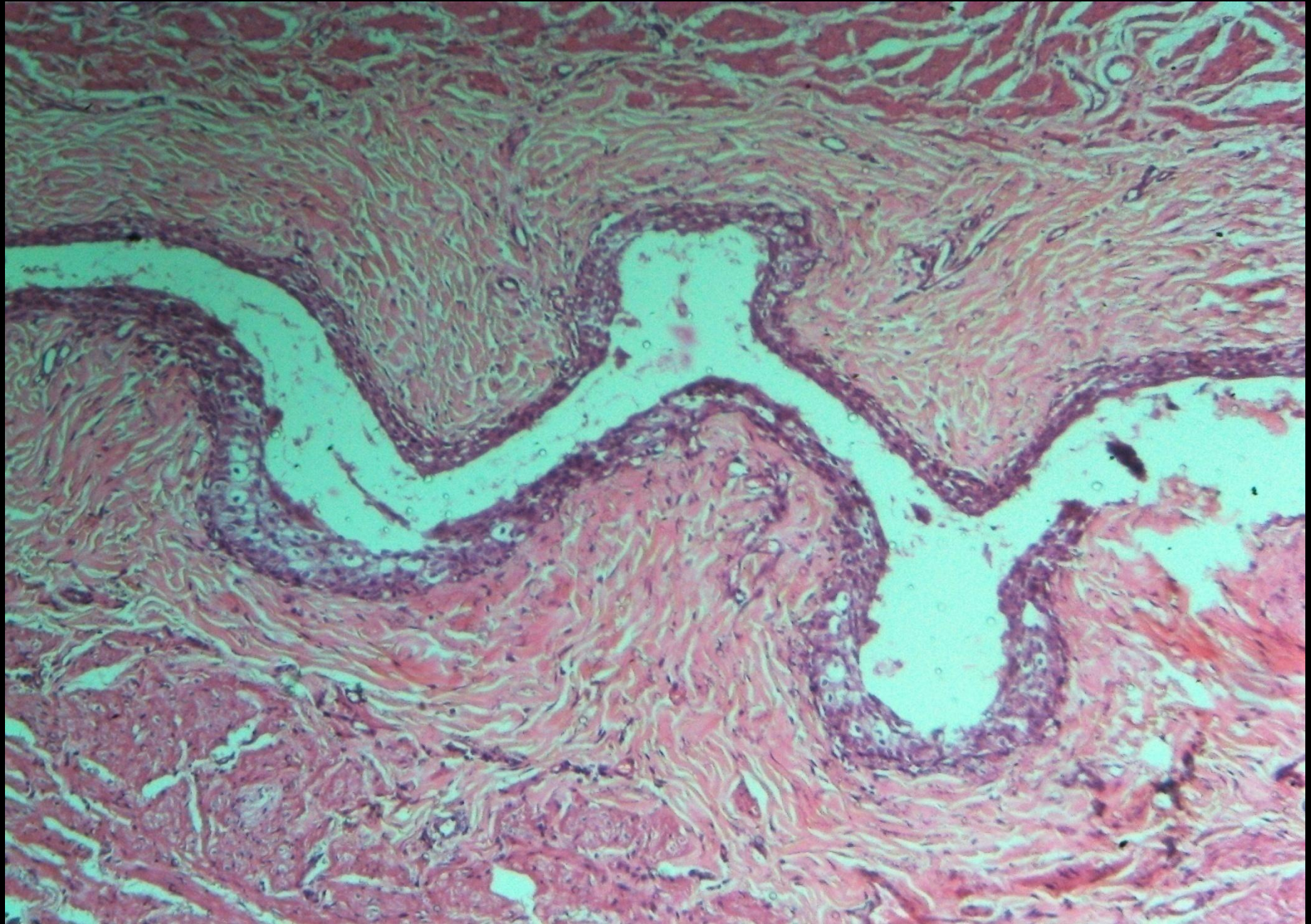


Kidney

- 1.Outer Cortex-Renal corpuscles and sections of proximal and distal convoluted tubules seen
- 2.Inner Medulla-Sections of collecting ducts and loop of Henle seen



Ureter

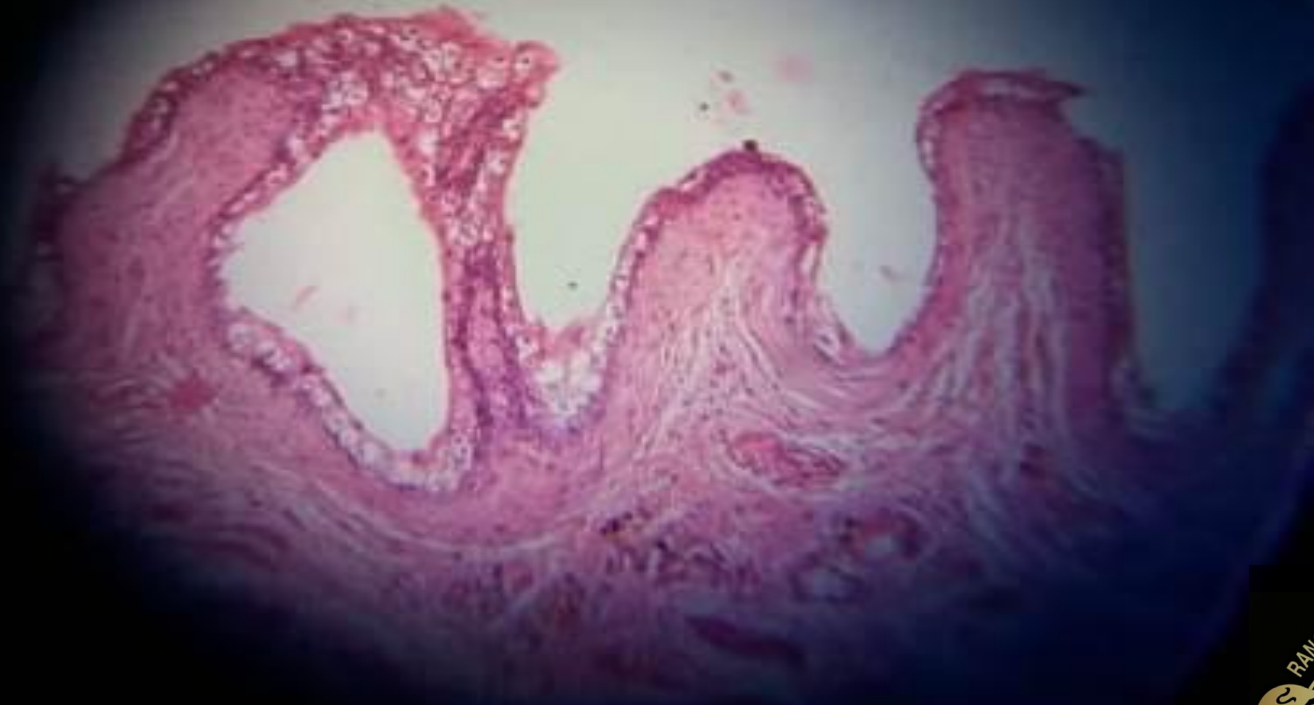


Ureter

1. Mucosal folds lined by transitional epithelium
2. Muscular tube-inner longitudinal, outer circular layer of smooth muscles.



Urinary Bladder



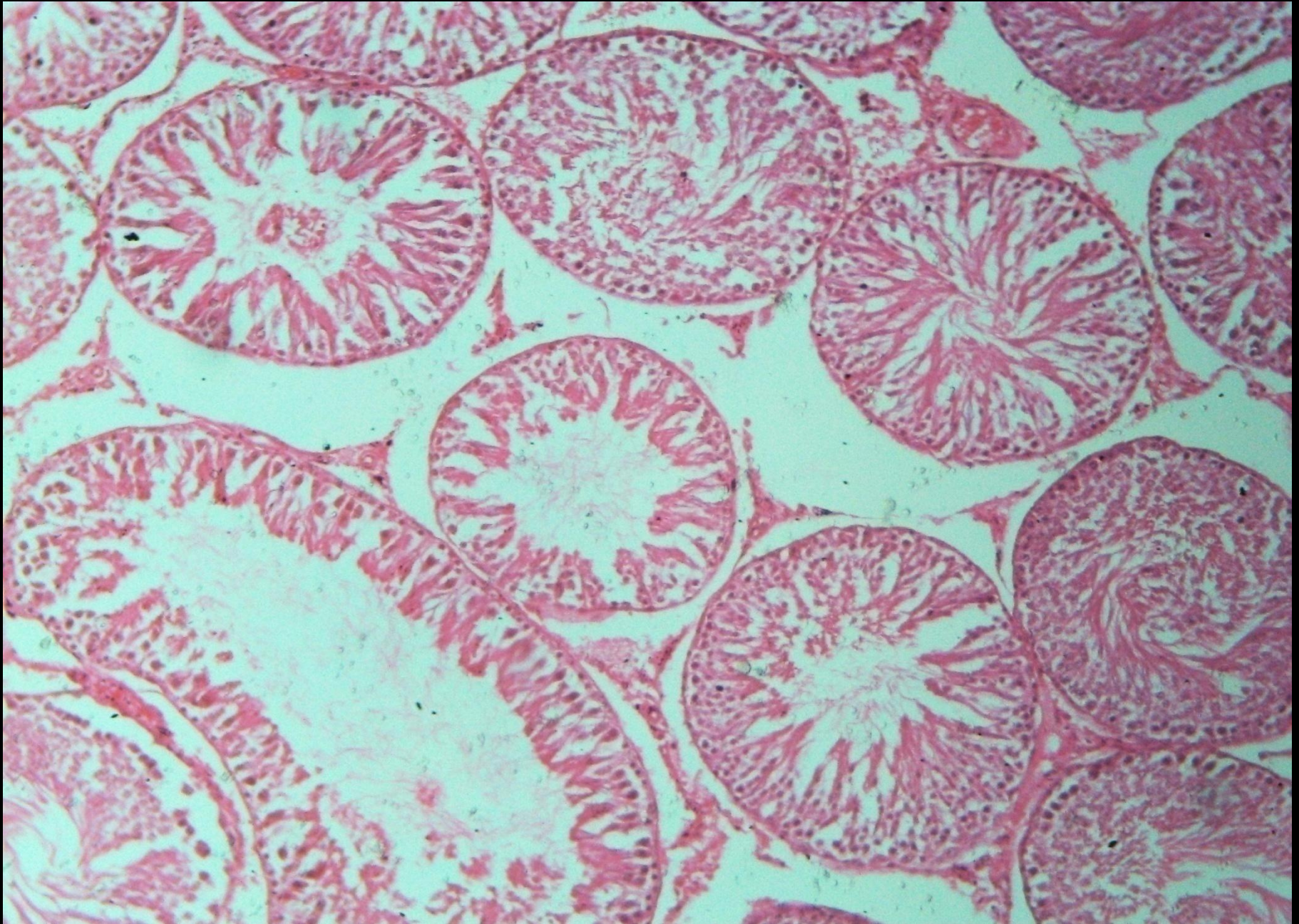
Urinary Bladder

1. Mucosa lined by transitional epithelium.
2. Thick muscular wall made of three ill-defined layers.
3. Thick lamina propria.

MALE REPRODUCTIVE SYSTEM



Testis

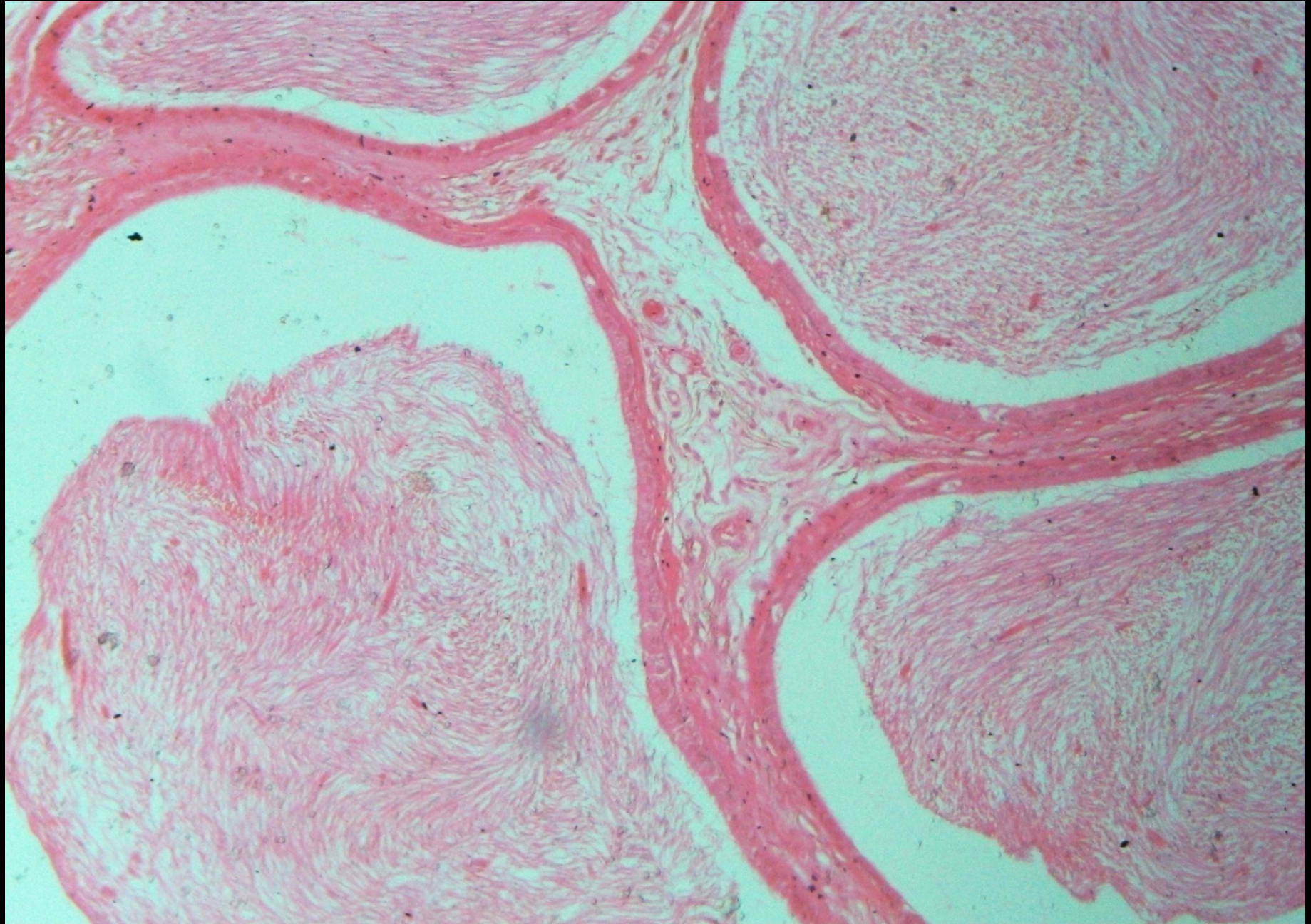


Testis

1. Sections of Seminiferous tubules lined by spermatogonia, different stages of spermatocytes and Sertoli cells.
2. Interstitial cells of Leydig in between the tubules seen.



Epididymis

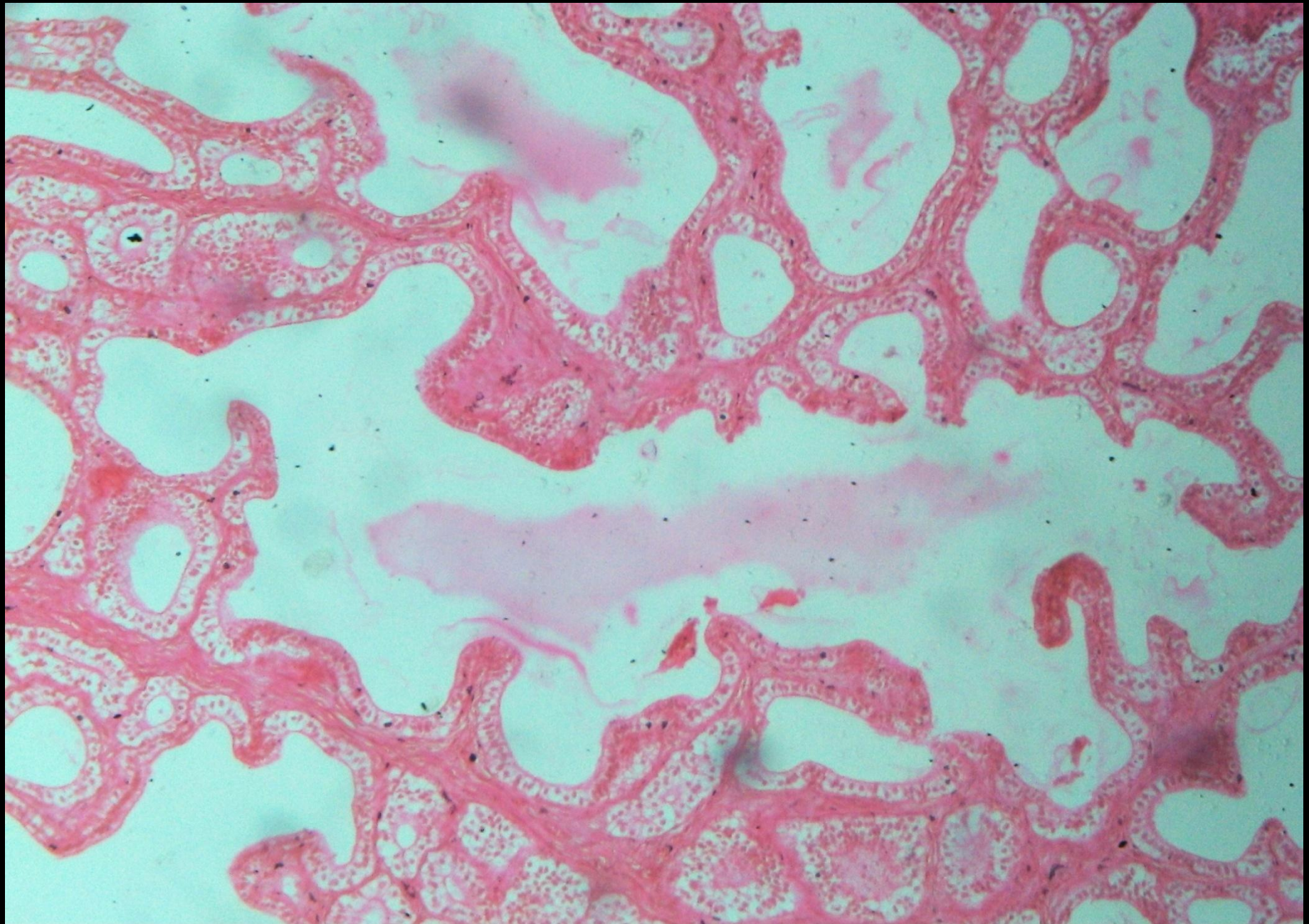


Epididymis

1. Sections of tubule lined by Pseudostratified columnar epithelium with stereocilia.
2. Lumen filled with sperms.
3. Each tube surrounded by smooth muscle cells.



Prostat

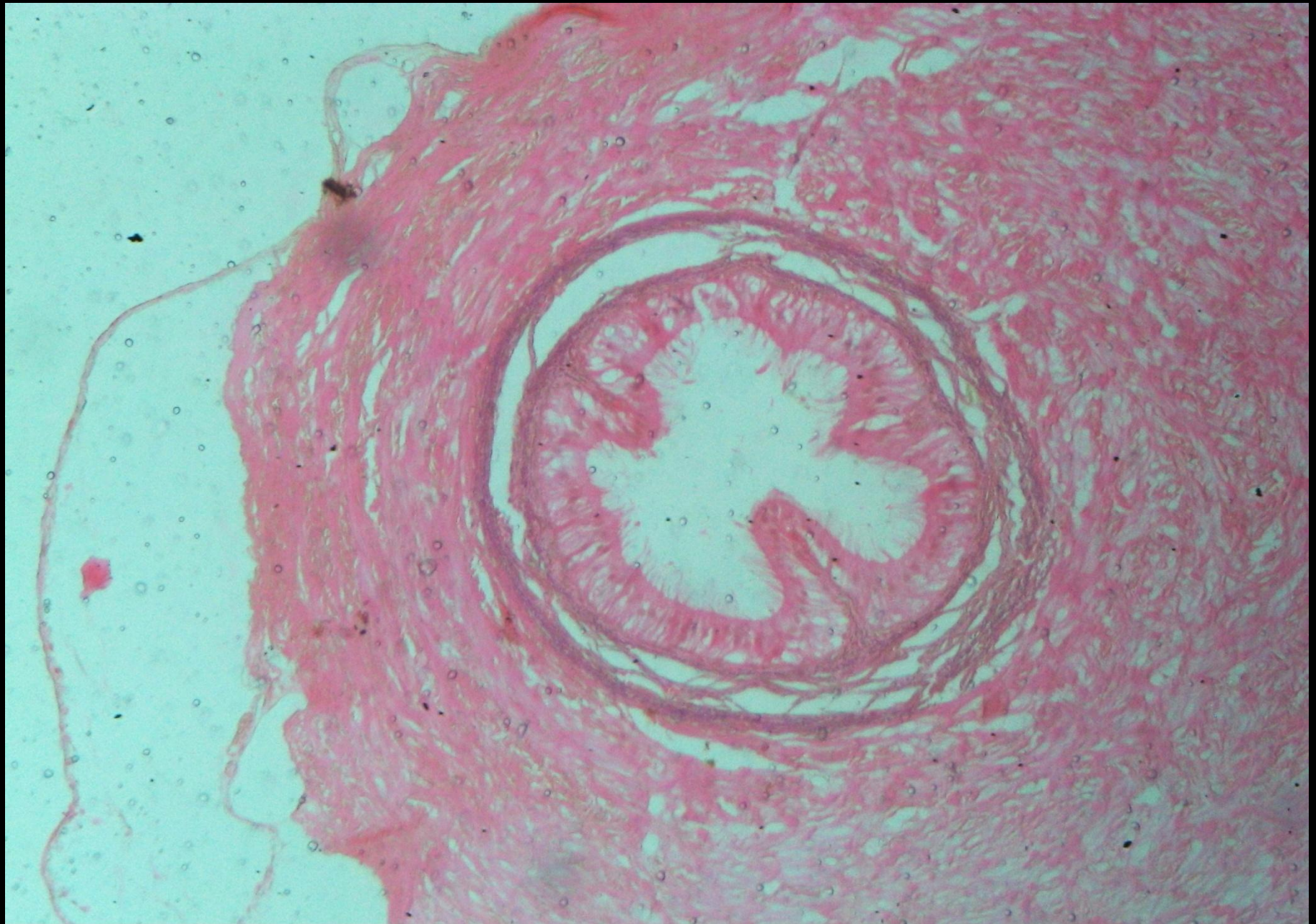


Prostate

1. Prostatic glands (acini or follicles) lined by simple columnar epithelium.
2. Mucosa thrown into folds, lumen contains Corpora amylacea.
3. Acini separated by thick fibromuscular stroma.



Vas Deferens



Vas deferens

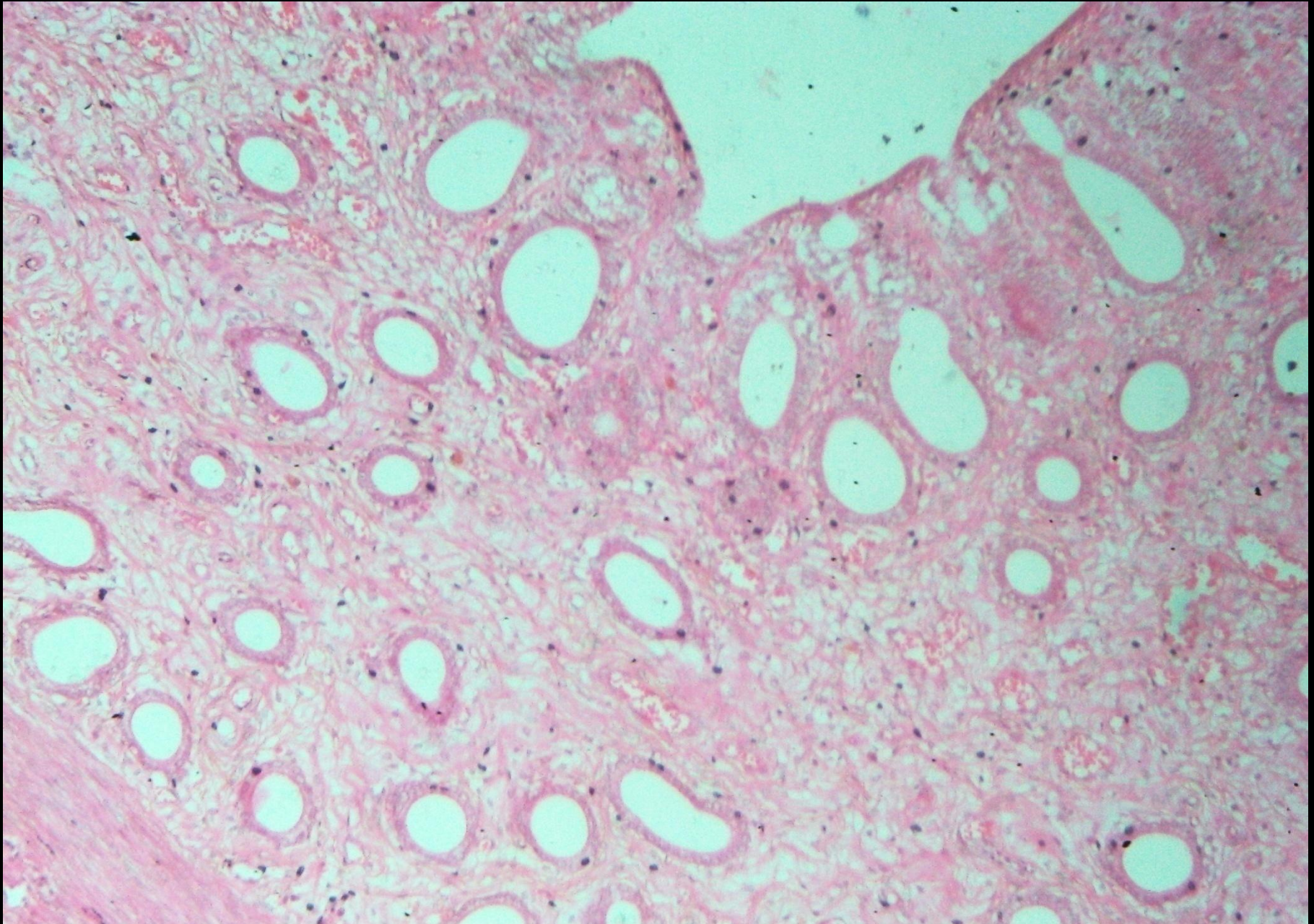
- 1.Mucosa lined by Simple Columnar cells (towards the distal end,it is lined by Pseudostratified Columnar epithelium).
- 2.Thick muscular tube.



FEMALE REPRODUCTIVE SYSTEM



Uterus



Uterus: Proliferative

1.Inner endometrium-lined by simple columnar cells

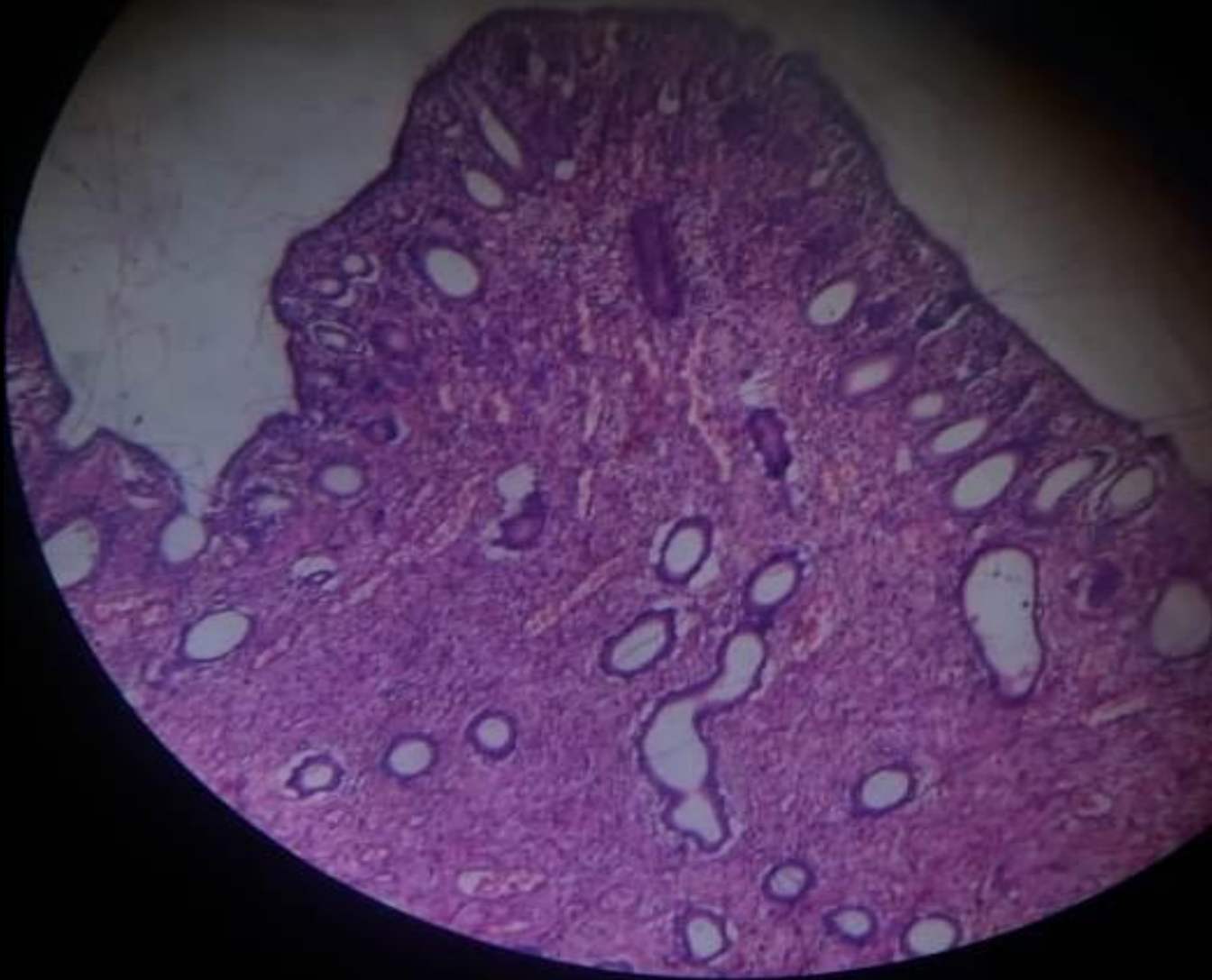
Stroma contains tubular Uterine glands and spiral arteries.

2.Middle thick muscular layer-Myometrium

3.Outer Perimetrium



Uterus



Uterus: Secretory

1.Inner endometrium-lined by simple columnar cells

Stroma contains tubular Uterine glands and spiral arteries.

2.Middle thick muscular layer-Myometrium

3.Outer Perimetrium



Fallopian Tube



Fallopian tube

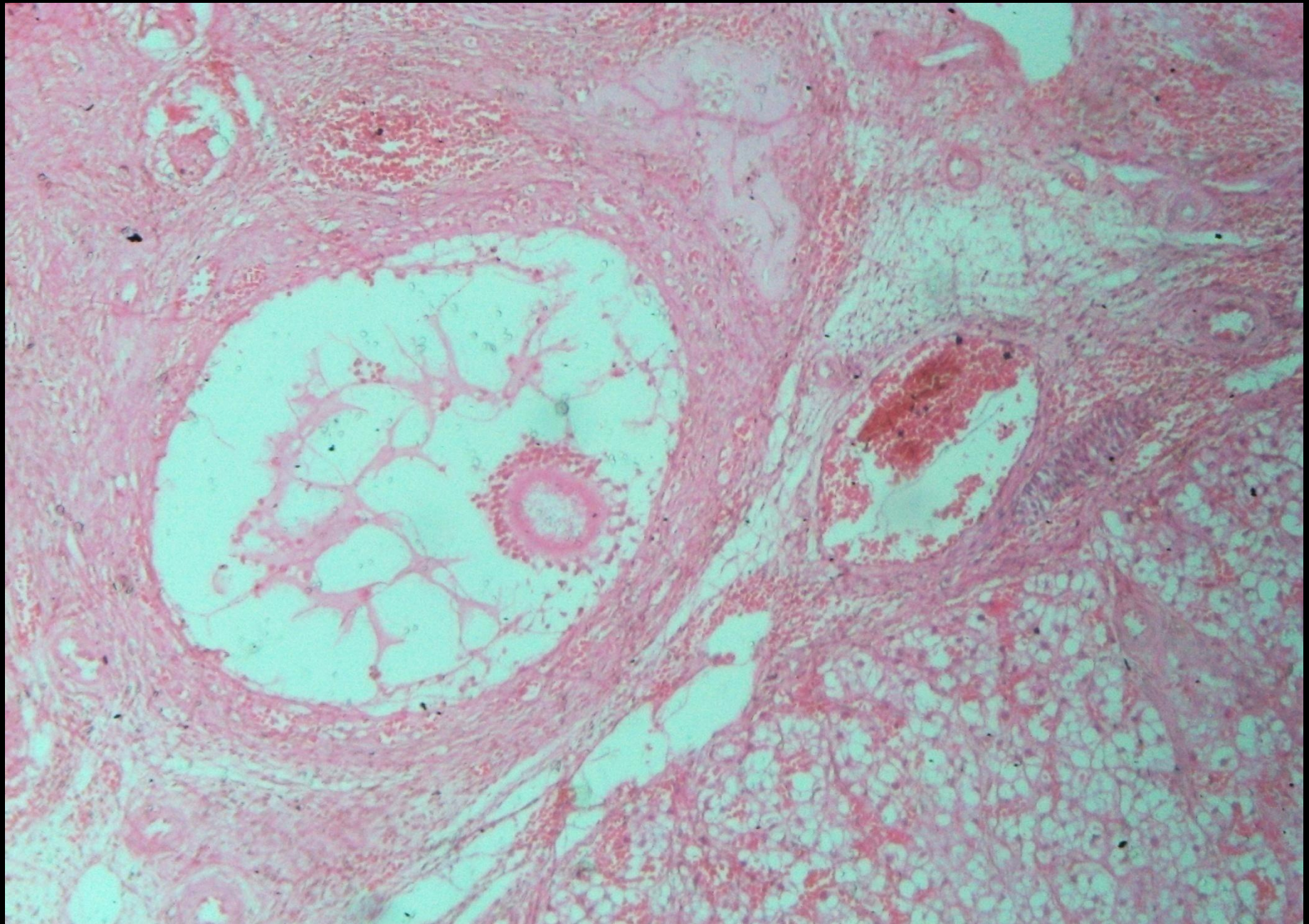
1.Lining epithelium-simple columnar cells with cilia.

Mucosa thrown into folds filling the lumen.

2.Muscular tube.



Ovary

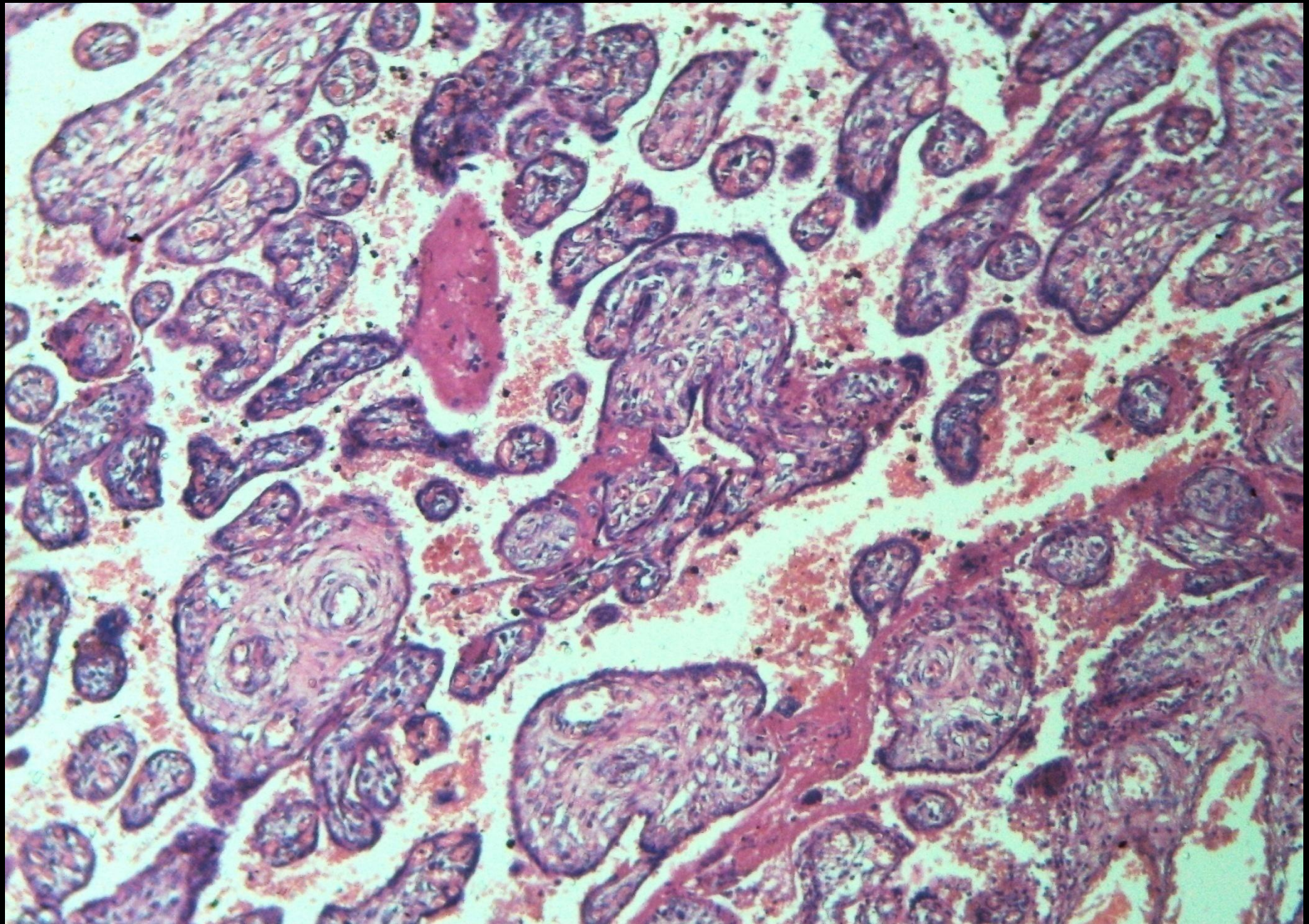


Ovary

- 1.Outer Cortex-shows ovarian follicles in different stages of development-Primordial,Primary,Secondary and Graffian follicle.
- 2.Inner Medulla-contains connective tissue with blood vessels.



Placenta

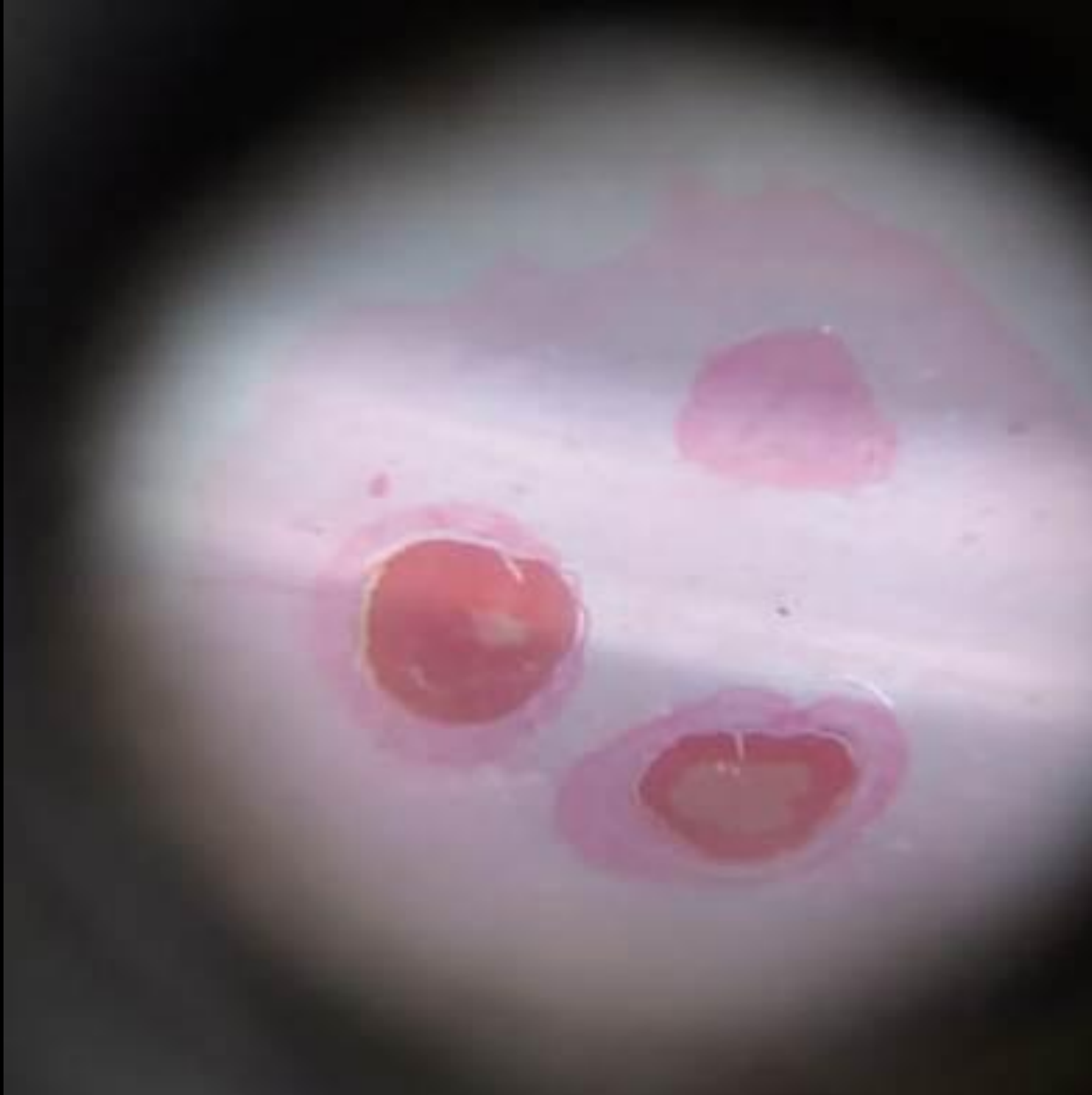


Placenta

1. Sections of Chorionic villi seen.
2. Villi with embryonic connective tissue core containing fetal capillaries and surrounded by outer Syncytiotrophoblasts and inner Cytotrophoblasts.



Umbilical Cord



Umbilical Cord

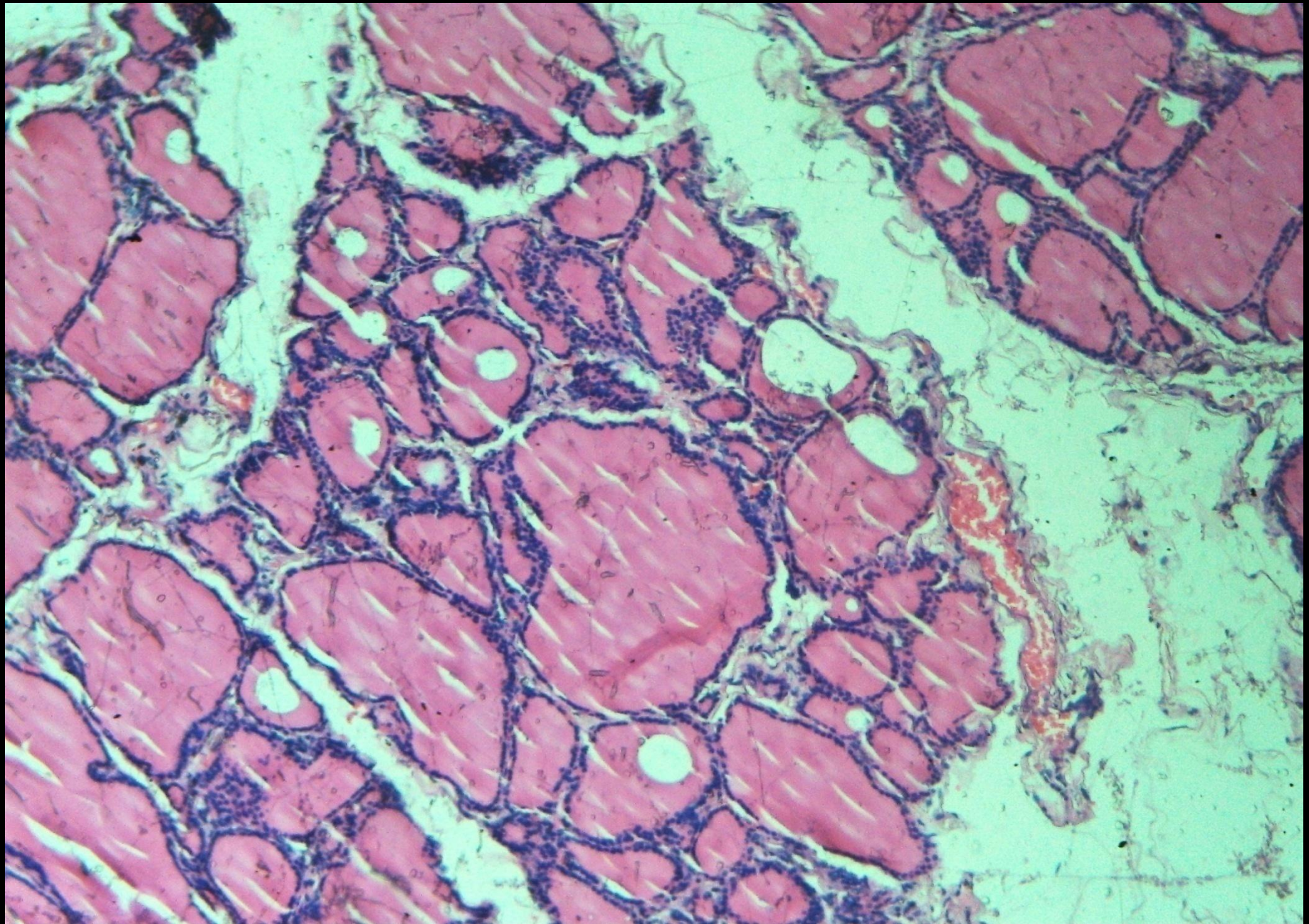
1. Two muscular arteries and one vein seen.
2. Wharton's jelly (embryonic mesenchyme) surrounding the vessels with outer amniotic covering.



ENDOCRINE GLANDS



Thyroid Gland

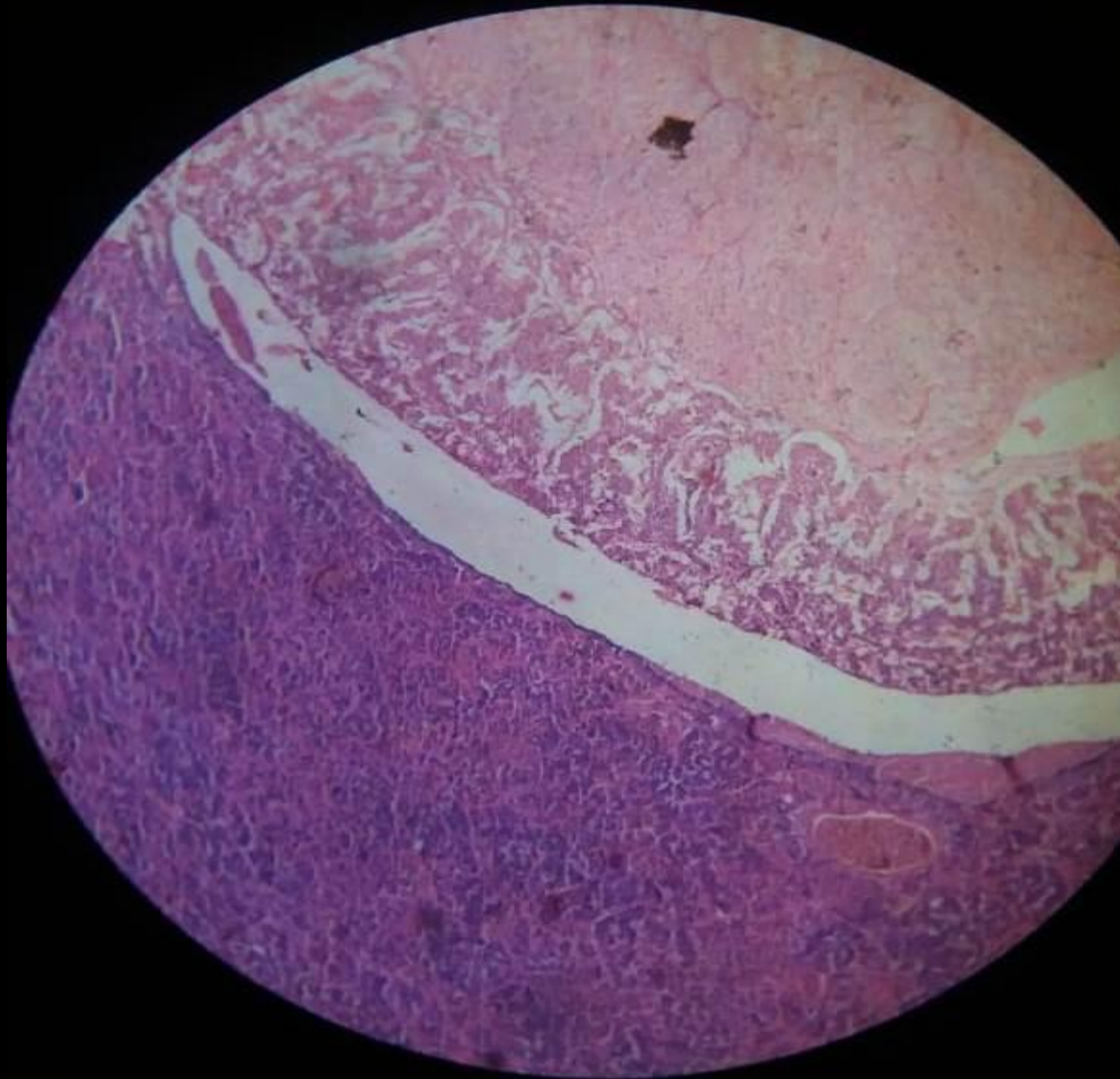


Thyroid gland

- 1.Sections of follicles of various sizes filled with colloidal,lined by cuboidal cells.
- 2.Parafollicular cells present.
- 3.Highly vascular tissue-plenty of capillaries seen.



Pituitary Gland

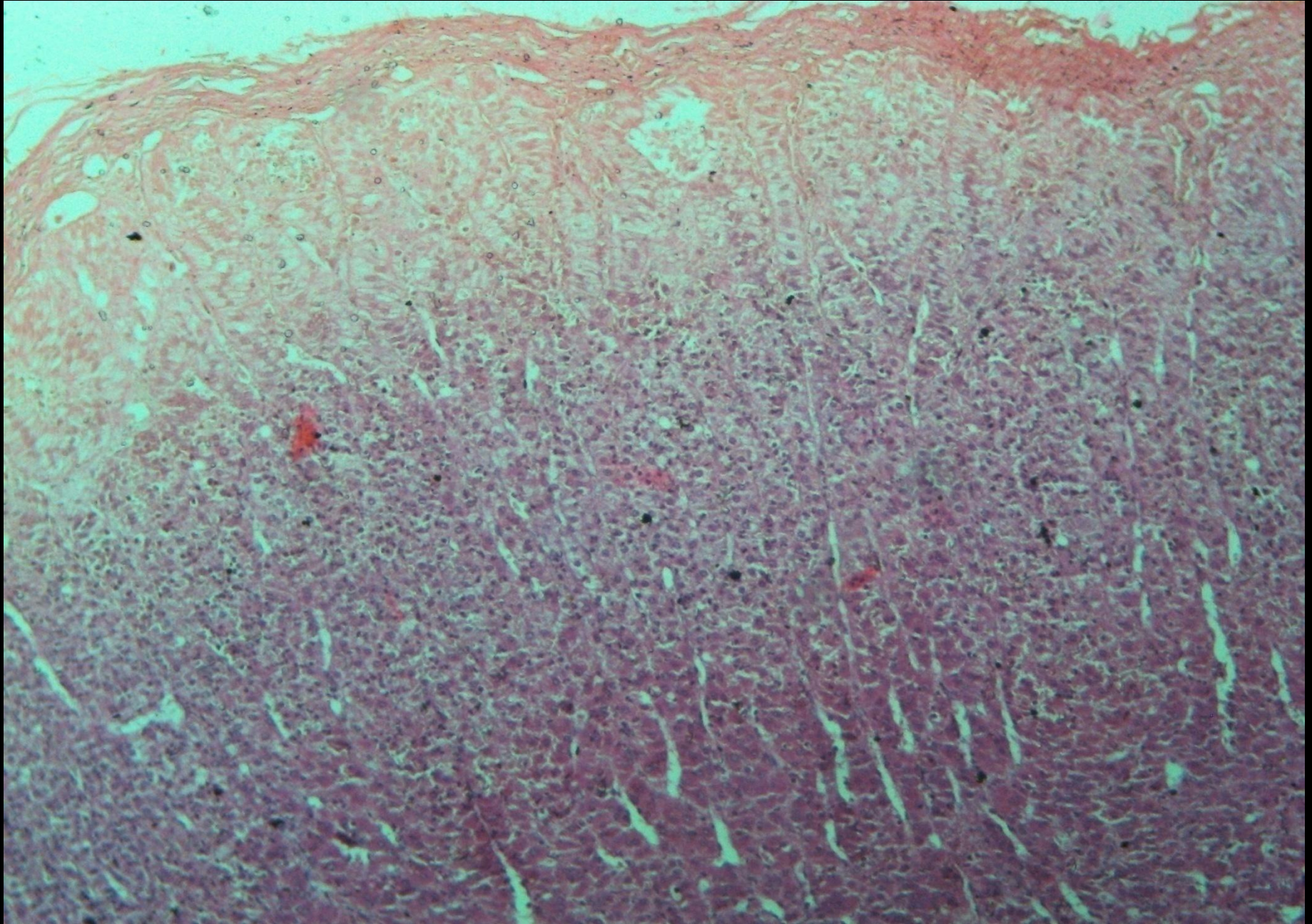


Pituitary gland

1. Adenohypophysis with Chromophobes and Chromophills arranged in groups.
2. Neurohypophysis with nerve fibres and pituicytes.



Suprarenal Gland



Suprarenal gland

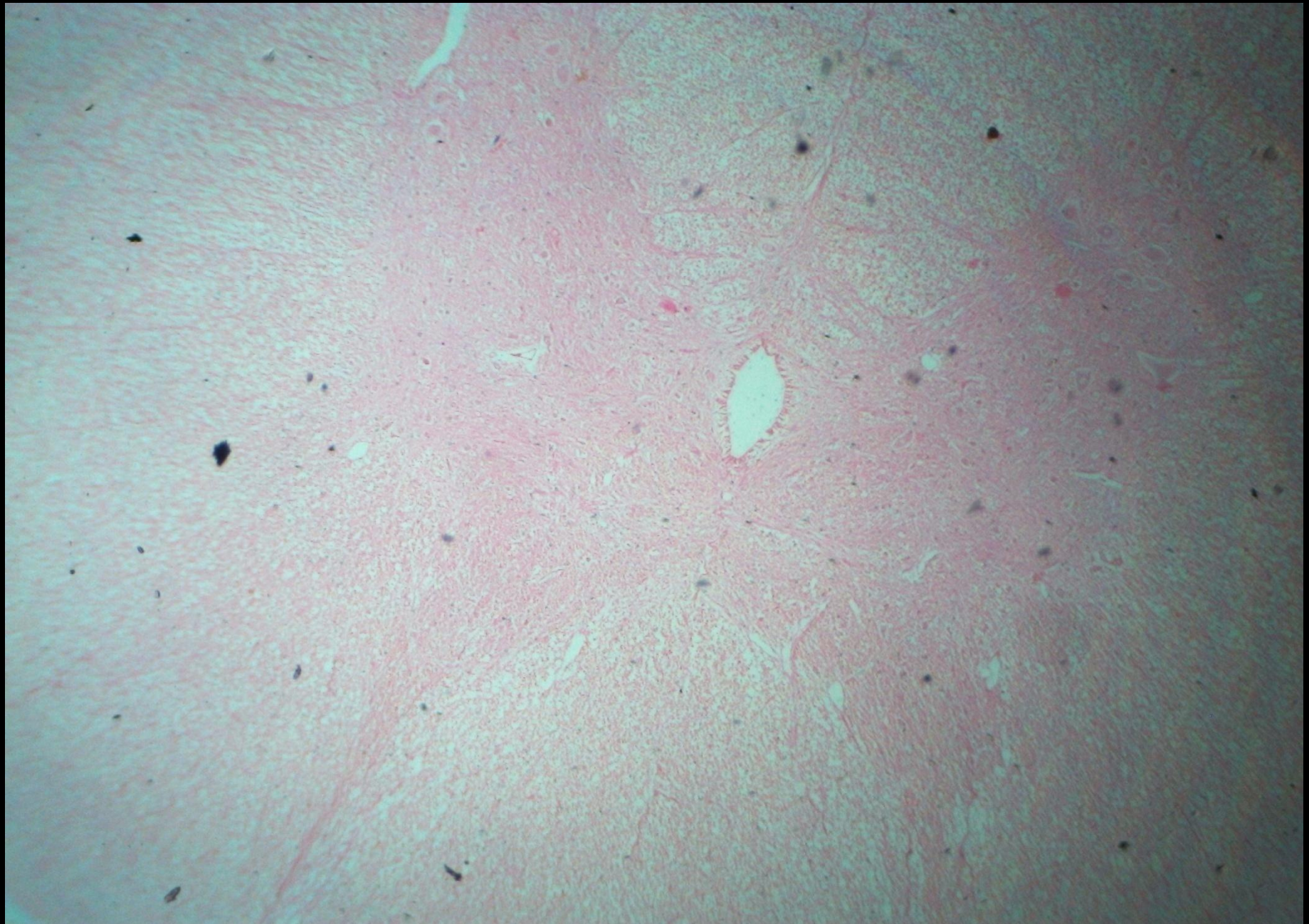
- 1.Cortex and medulla differentiated.
- 2.Cortex with outer Zona glomerulosa,middle Zona fasciculata and inner Zona reticularis.
- 3.Medulla with polyhedral Chromaffin cells in groups.



NERVOUS TISSUE



Spinal Cord



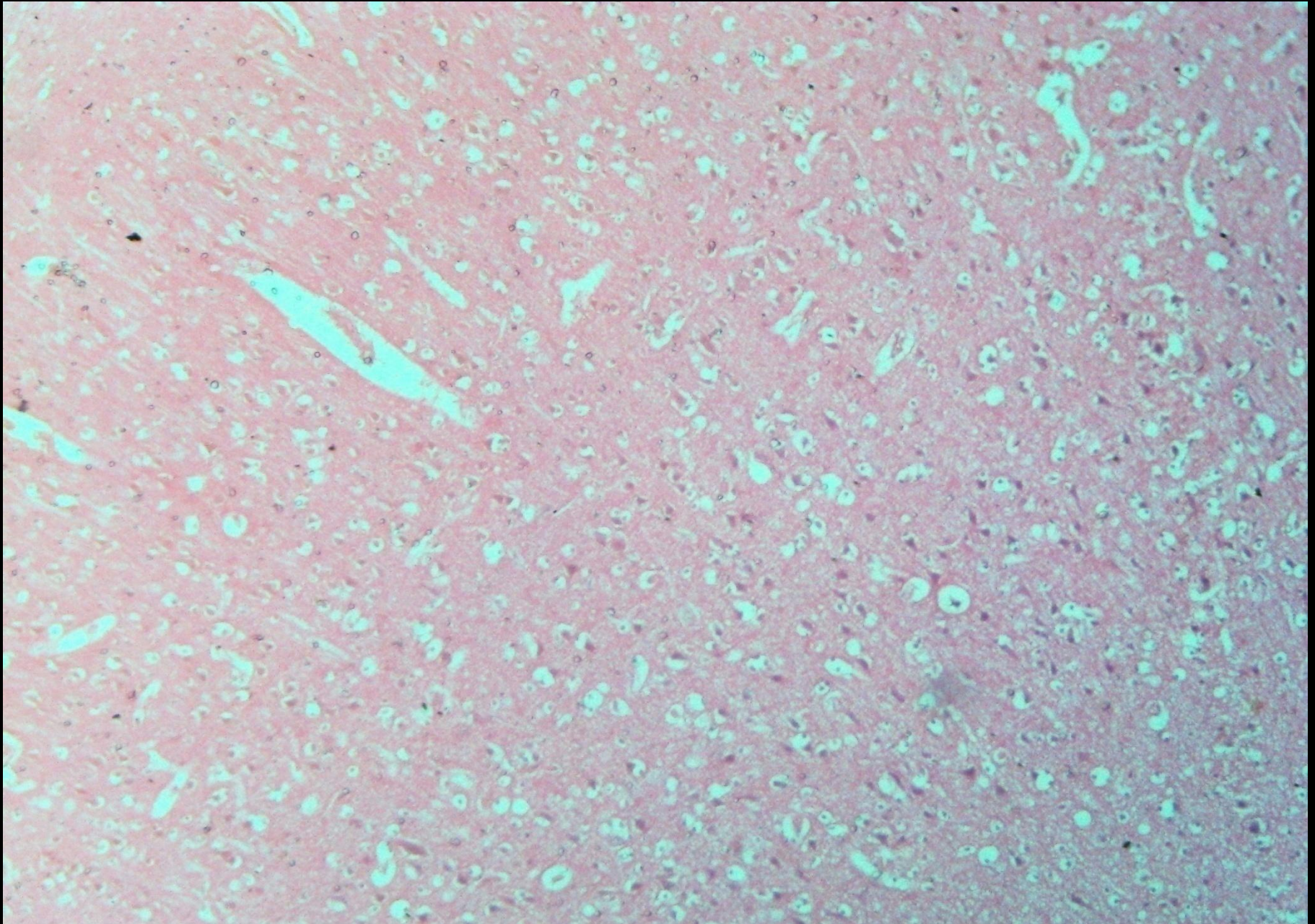
SPINAL CORD

Identification Points:

- Central canal
- Butterfly shaped grey matter
- Dorsal median sulcus and ventral median fissure (depending on the portion under examination)



Cerebrum



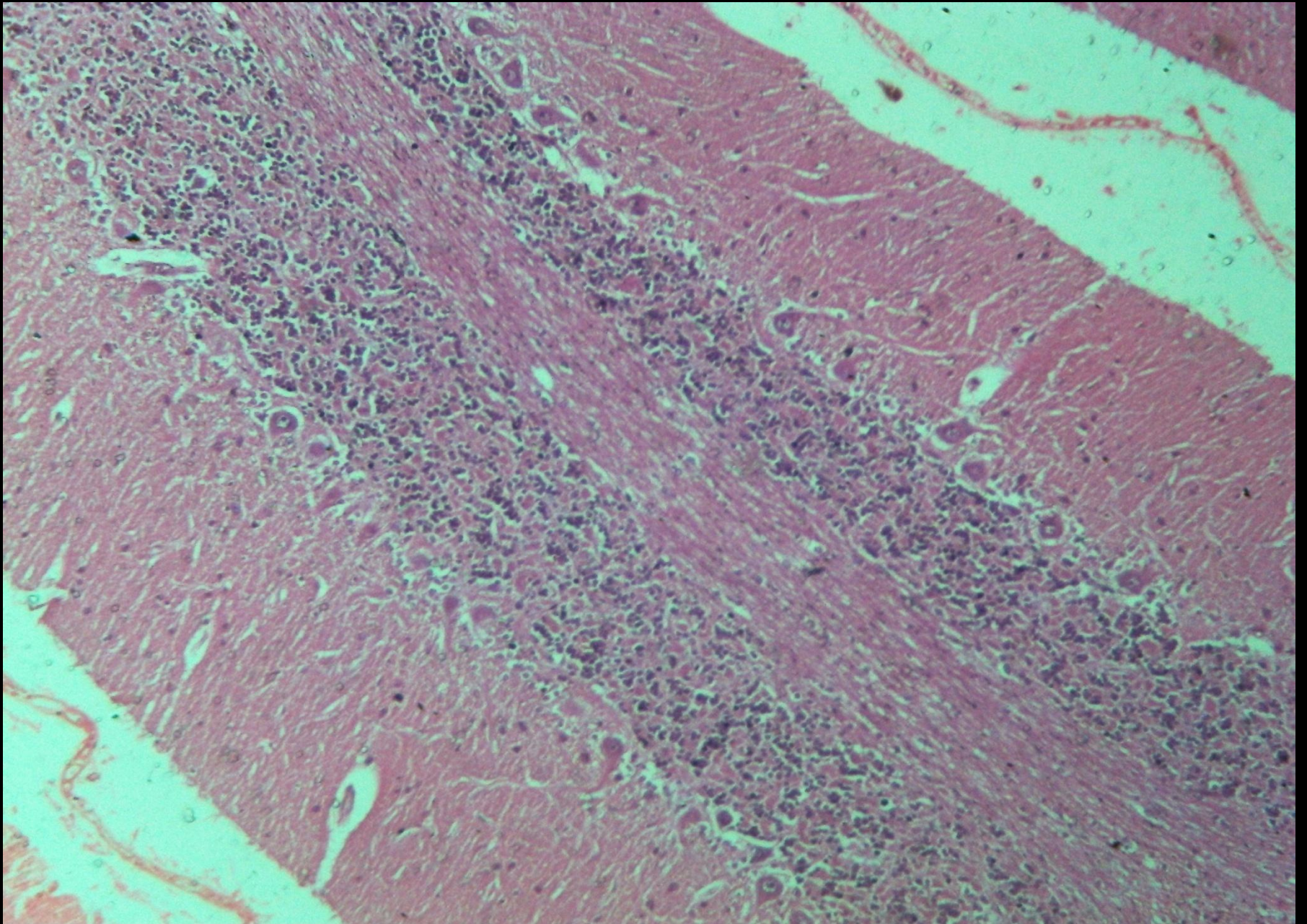
CEREBRUM

Identification points:

- Pyramidal and non pyramidal cells
- Arranged in the form of layers (mention the names) – properly visible only by 'Nissl staining method'



Cerebellum



CEREBELLUM

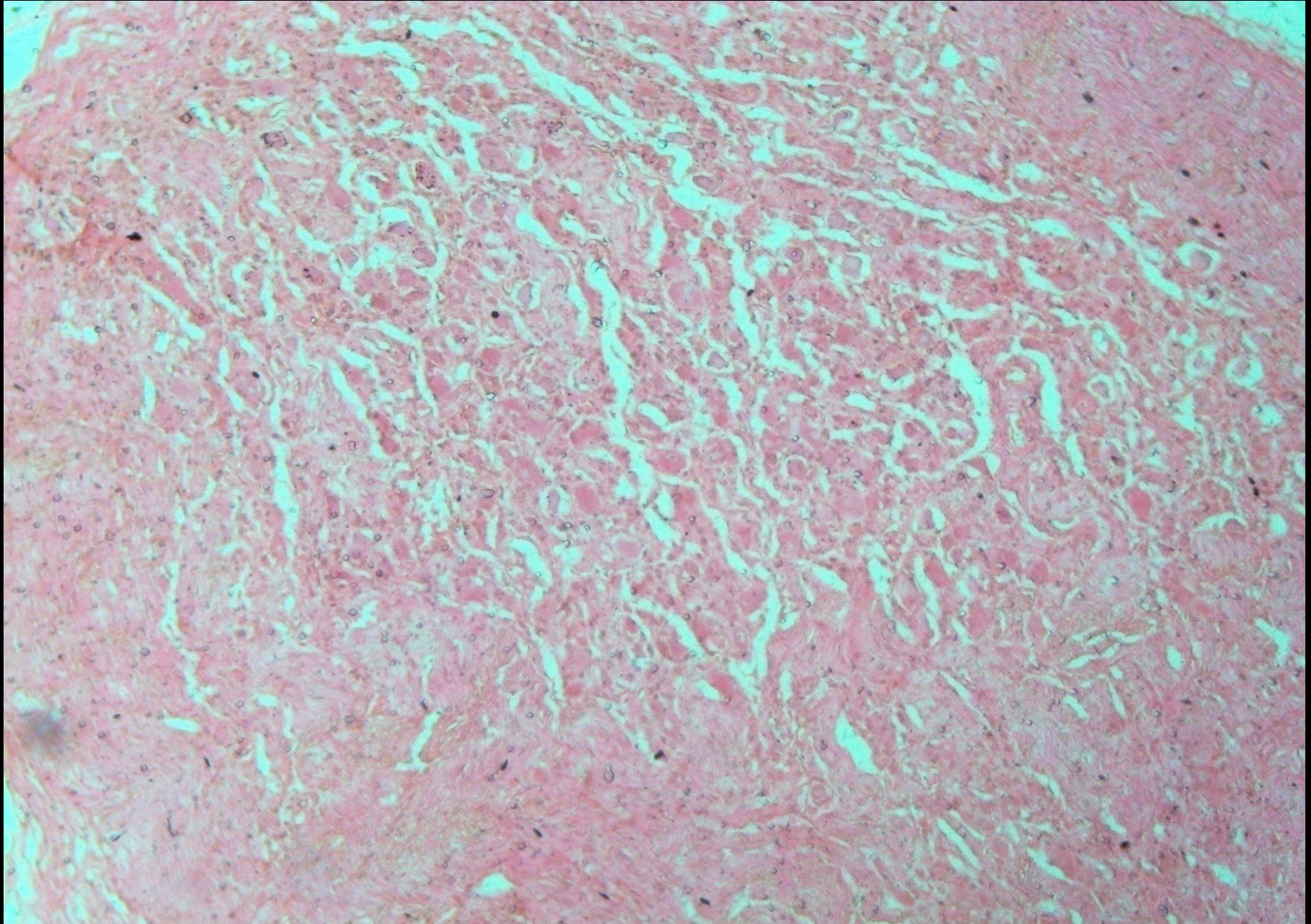
Identification Points:

From outwards to inwards:

- Molecular layer with fan shaped dendrites, stellate cells and basket cells (but cell population is very low)
- Flask shaped Perkinge cells
- Granular layer (deeply basophilic appearance of closely packed nuclei)



Sympathetic Ganglion

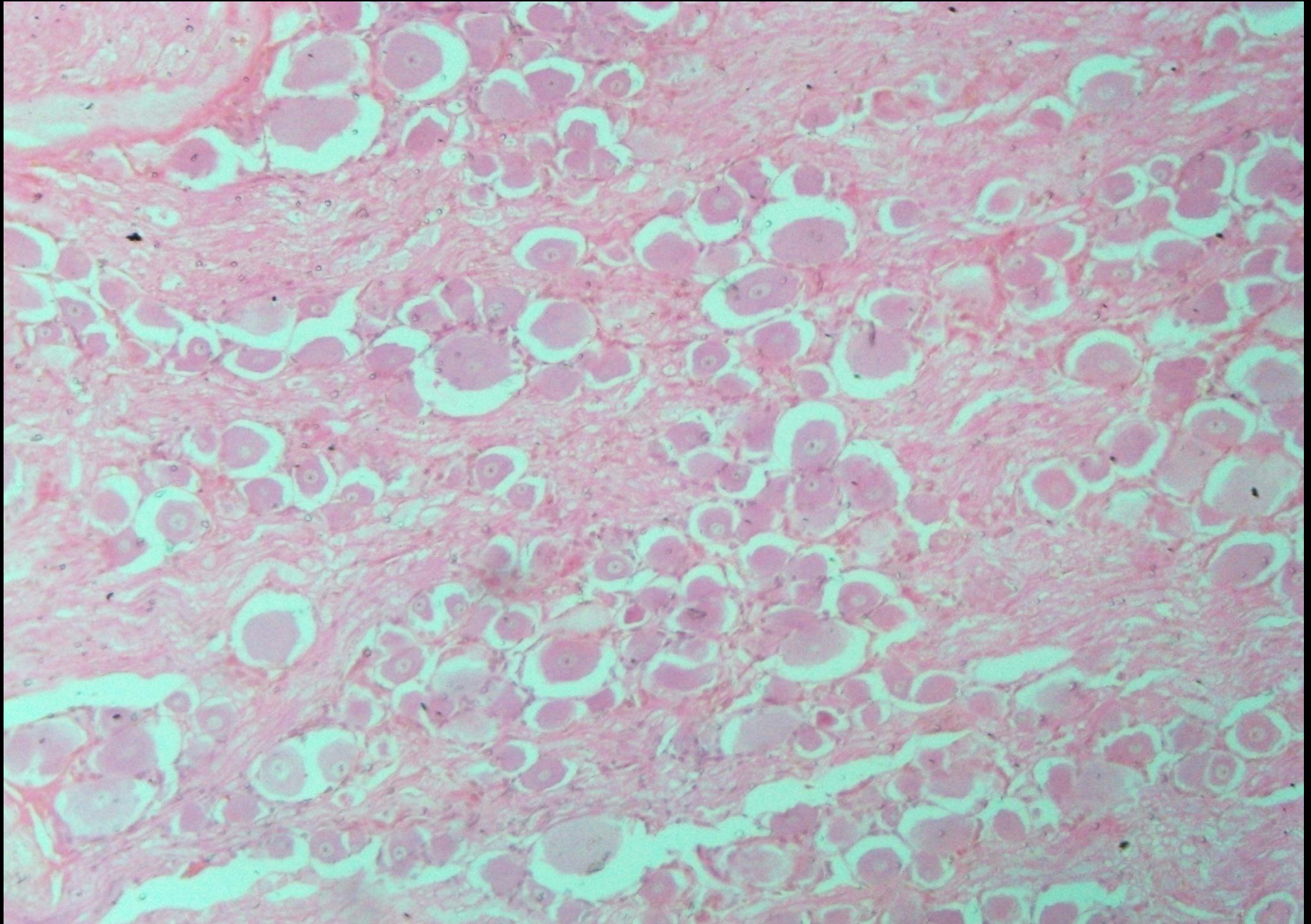


Sympathetic Ganglion

- 1.Small multipolar neurons with eccentric nucleus surrounded by satellite cells.
- 2.Scattered between the nerve fibres.
- 3.Thin connective tissue capsule.



Spinal Ganglion



Spinal Ganglion/Dorsal root Ganglion

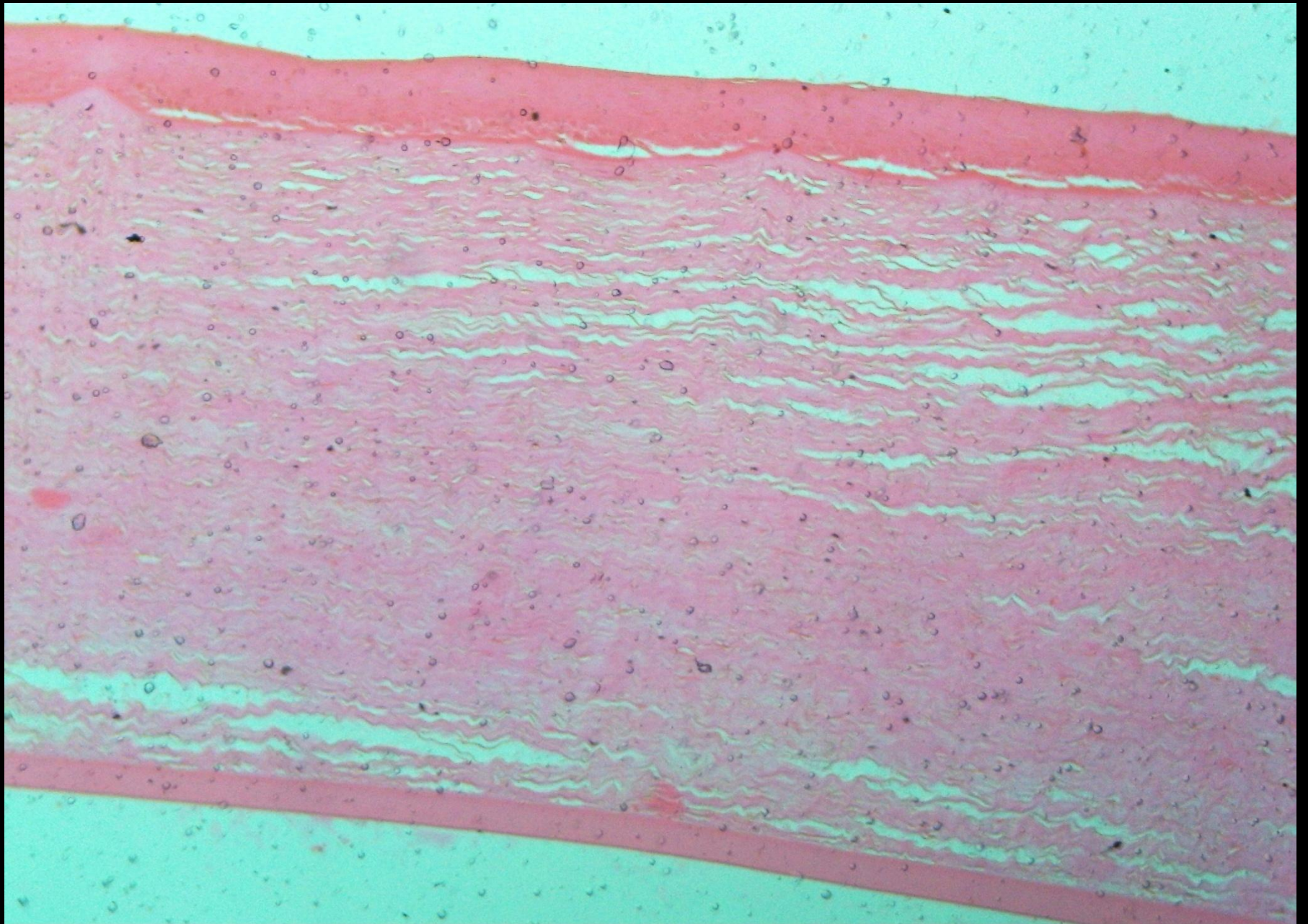
1. Large pseudounipolar neurons with central nucleus surrounded by satellite cells.
- 2 Arranged in groups between bundles of nerve fibres.
3. Thick connective tissue capsule.



SPECIAL SENSES



Cornea

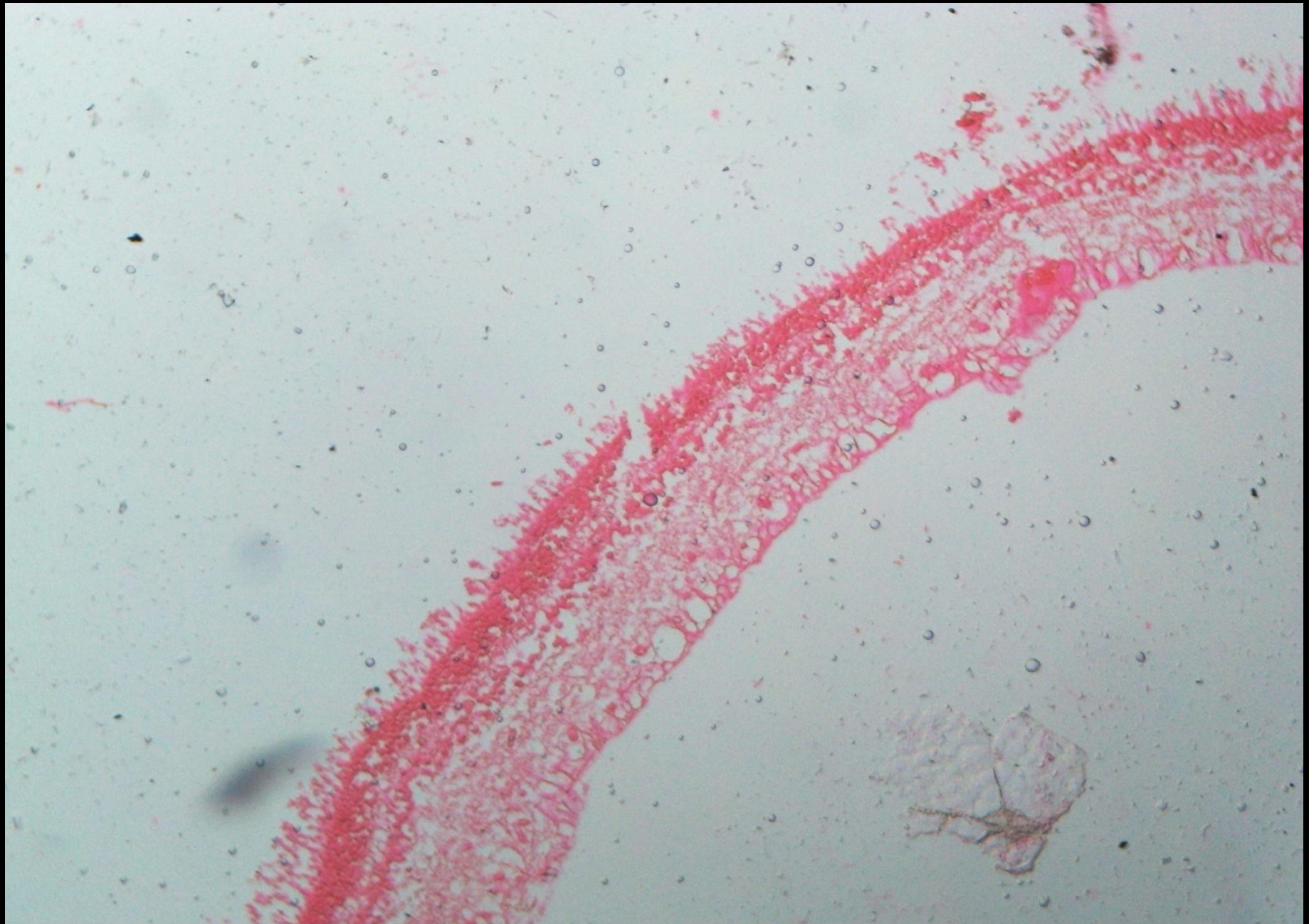


Cornea

1. Five layered Structure.
2. Outer Stratified squamous epithelium-non keratinized.
3. Middle thick layer of Substantia propria.



Retina

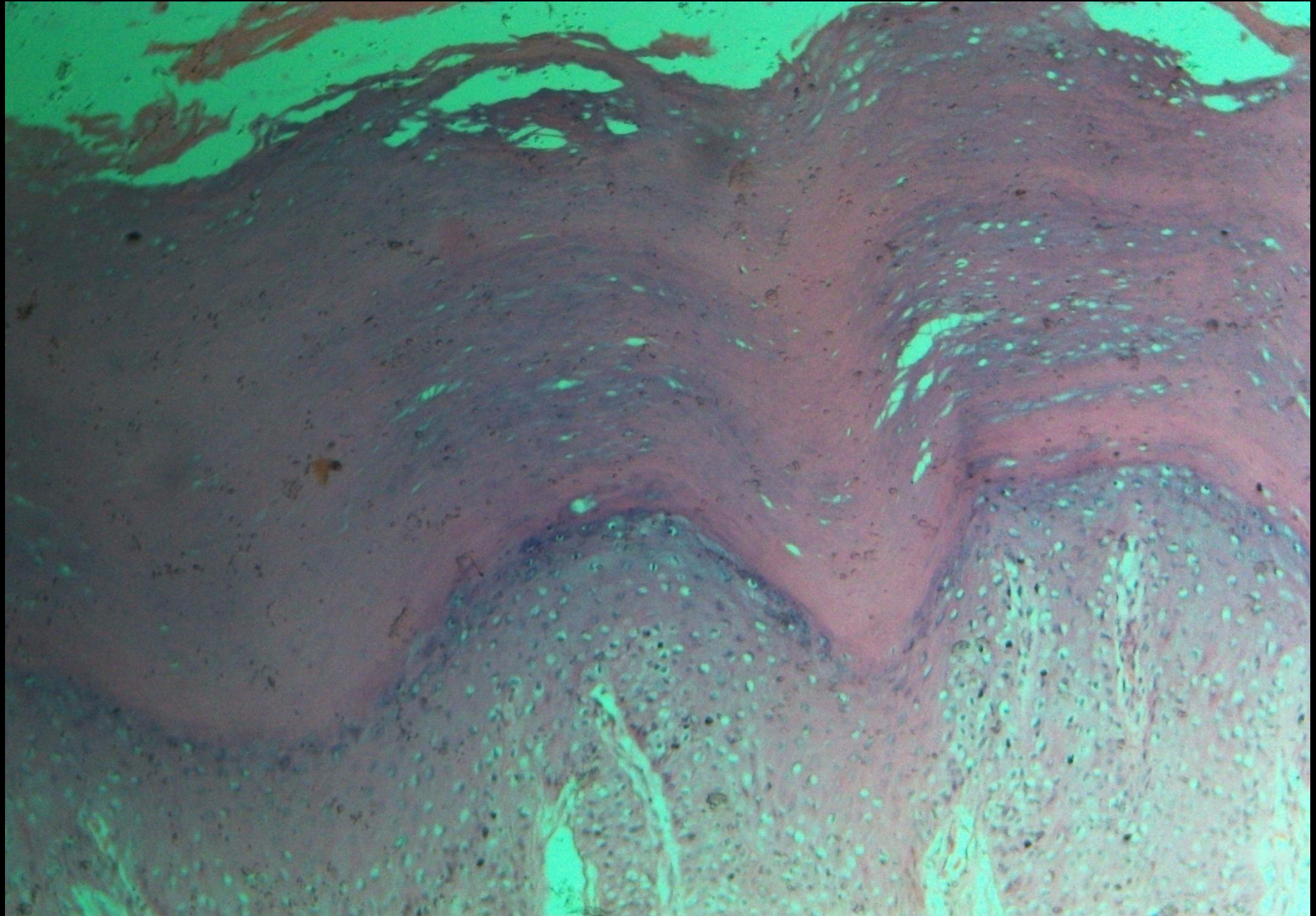


Retina

- 1.Ten layered structure.
- 2.Outer most pigment cell layer,nuclear and ganglion cell layer are prominent.
- 3.Rods and cones are present.



Thick Skin



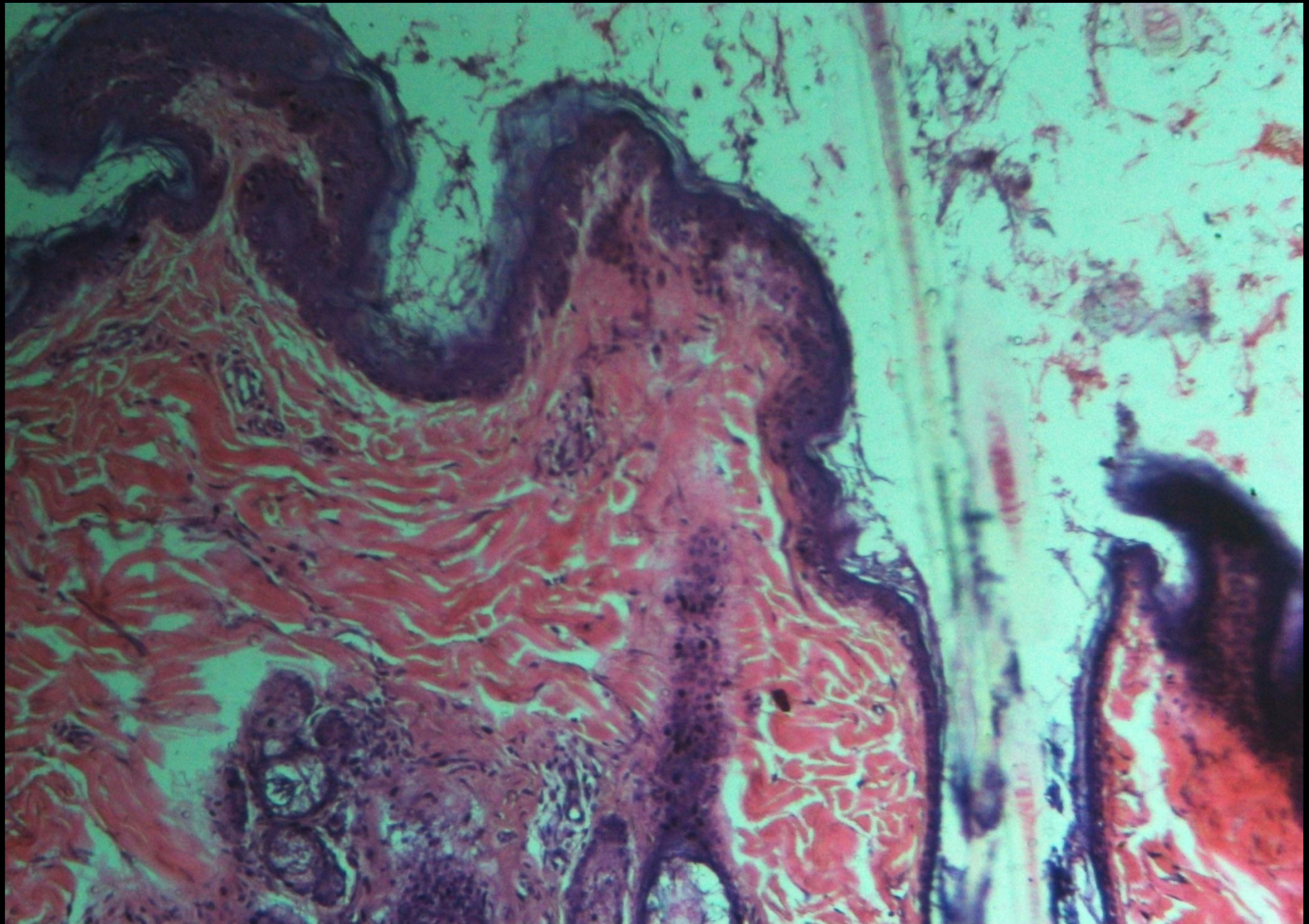
THICK SKIN

Identification Points:

- Stratified squamous keratinized epithelium
- No hair roots and follicles
- Pacinian corpuscles



Thin Skin



THIN SKIN

Identification Points:

- Stratified squamous keratinized epithelium
- Dense irregular CT beneath
- Hair follicles and roots present
- Sebaceous glands
- Sweat glands

